PACIFIC SARDINE (PILCHARD) EGGS AND LARVAE AND OTHER FISH LARVAE, PACIFIC COAST, 1953

Marine Biological Laboratory
LIBRARY
JUL 11 1955
WOODS HOLE, MASS.

SPECIAL SCIENTIFIC REPORT–FISHERIES No. 155

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

EXPLANATORY NOTE

The series embodies results of investigations, usually of restricted scope, intended to aid or direct management or utilization practices and as guides for administrative or legislative action. it is issued in limited quantities for official use of Federal, State or cooperating agencies and in processed form for economy and to avoid delay in publication.

United States Department of the Interior, Douglas McKay, Secretary
Fish and Wildlife Service, John L. Farley, Director

PACIFIC SARDINE (PILCHARD) EGGS AND OTHER FISH LARVAE, PACIFIC COAST, 1953

by

Elbert H. Ahlstrom and David Kramer
Fishery Biologists

Special Scientific Report: Fisheries No. 155

Washington, D.C.
May 1955

PACIFIC SARDINE (PILCHARD) EGGS AND LARVAE AND OTHER FISH LARVAE, PACIFIC COAST, 1953

The results of quantitative sampling of fish eggs and larvae off the coasts of California and Baja California during 1953 are given in this report, the fourth in a continuing yearly series. The species reported upon are the following: Pacific sardine (Sardinops caerulea), northern anchovy (Engraulis mordax), jack mackerel (Trachurus symnetricus), Pacific mackerel (Pneumatophorus diego), hake (Merluccius productus) and rockfish (Sebastodes spp.).

The collection of the plankton material containing fish eggs and larvae was done on biological-oceanographic cruises made by agencies participating in the California Cooperative Oceanic Fisheries Investigations. The investigations are sponsored by the Marine Research Committee, and are carried out cooperatively by the South Pacific Fishery Investigations of the U. S. Fish and Wildlife Service, the Scripps Institution of Oceanography of the University of California, and the Bureau of Marine Fisheries of the California Department of Fish and Game. A record of all zooplankton collections made in 1953 is contained in "Zooplankton Volumes off the Pacific Coast, 1953", Special Scientific Report: Fisheries No. 132. Included for each haul are position of occupancy, date, hour, depth of haul, and volume of water strained.

In the present report, standardized haul factors for the 1953 plankton hauls are listed in Table I. All records of Pacific sardine eggs in 1953 (standardized haul values) are given in Table II. The eggs are enumerated by age (in days) since spawning. The larvae of four species are enumerated by size: Pacific sardine in Table III, northern anchovy in Table IV, jack mackerel in Table V, and Pacific mackerel in Table VI. The larvae of two groups are tabulated by number only: hake, in Table VII, and rockfish in Table VIII.

It is with deep pleasure that the authors acknowledge the cooperation given by the Scripps Institution of Oceanography and the California Department of Fish and Game in the collection of data at sea. All personnel of the South Pacific Fishery Investigations contributed to this project - many devoting their full time to it. Robert Counts and James Thrailkill aided in the identifications, enumerations, and measurements given in this report.

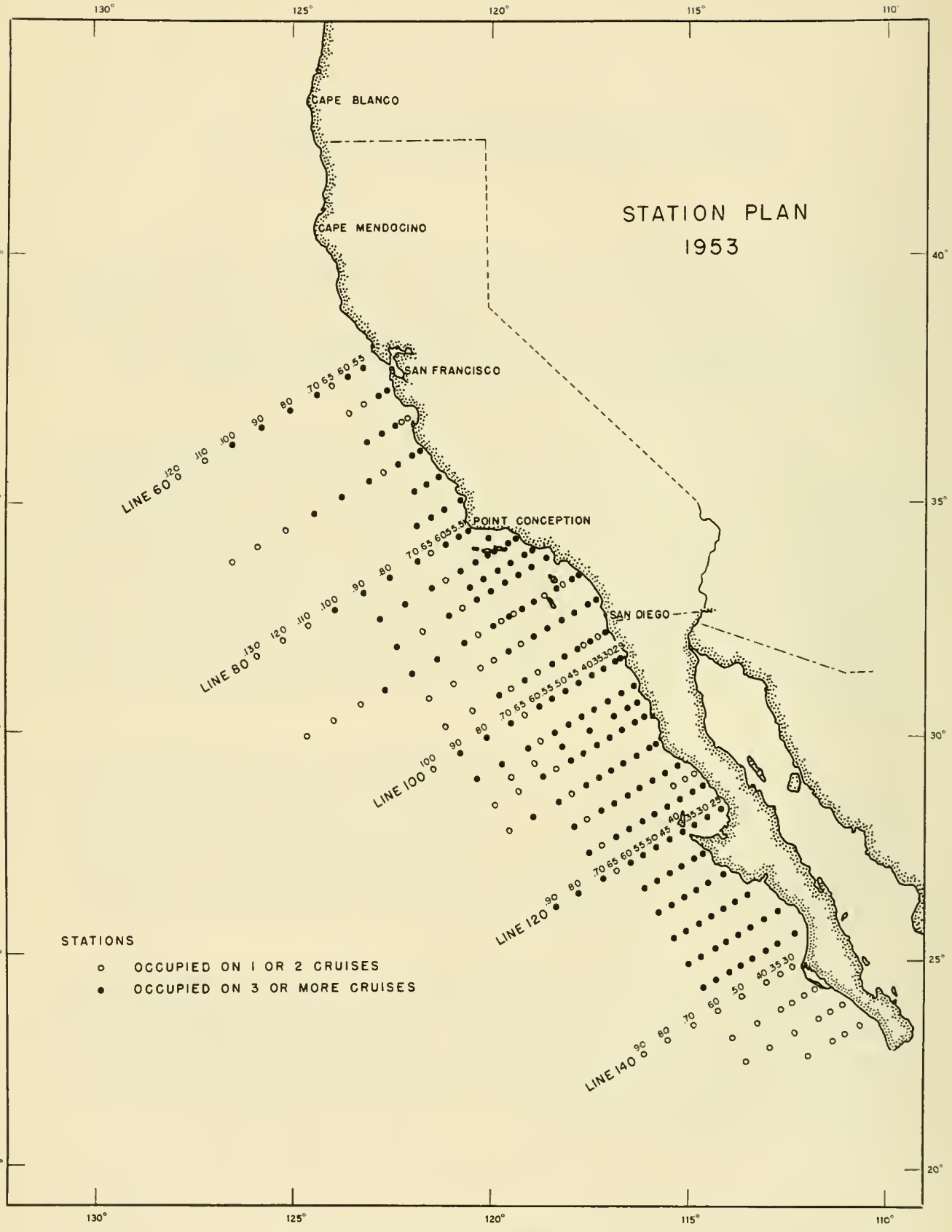

Figure 1.- Station plan, showing location of all stations occupied on routine survey cruises of the California Cooperative Oceanic Fisheries Investigations during 1953.

AREA COVERED

The stations occupied in 1953 are shown in figure 1. Stations occupied on three or more cruises are indicated by black dots, those occupied on only one or two cruises as open circles.

Coverage in 1953 is summarized by area in text table 1. The coverage varied both in extent and intensity on different cruises. The period of most intensive coverage was from March through June, the main sardine spawning season. The area between Point Conception and Point San Juanico (station lines 80-137) was regularly surveyed, the area off central California (station lines 60-77) was covered on five cruises (5304 through 5308), and the area off southern Baja California (station lines 140-150) on only one cruise. The most frequent coverage in time was obtained off southern California on lines 83 to 87 (16 occupancies during the year).

Text table 1.- Coverage during 1953, summarized by month and area

Month	Cruise number	Central Calif. (sta. lines 60-77)	So. Calif. (80-93)	No. Baja Calif. (97-107)	Central Baja Calif. (110-137)	So. Baja Calif. (140-150)	Total all areas
January	5301	0	34	20	29	13	96
January	5301E	0	2	0	0	0	2
February	5302	0	35	17	43	0	95
March	5303	0	36	17	60	0	113
Late March	5303	0	0	0	63	0	63
April	5304	19	66	41	73	0	199
April	5304E	0	9	0	0	0	9
May	5305	31	63	38	72	0	204
May	5305E	0	17	0	0	0	17
June	5306	26	56	43	71	0	196
June	5306E	0	7	0	0	0	7
July	5307	24	38	20	40	0	122
August	5308	19	38	20	41	0	118
September	5309	0	18	0	24	0	42
October	5310	0	18	16	37	0	71
November	5311	0	20	0	0	0	20
December	5312	0	28	17	37	0	82
Total		119	485	249	590	13	1456

Six vessels participated in survey cruises during 1953. These were the S. F. Baird, the Crest, the Horizon, the Paolina T. and the E. W. Scripps of the Scripps Institution of Oceanography, and the Yellowfin of the California Department of Fish and Game. The vessels taking part in monthly and special survey cruises are listed in text table 2.

Text table 2.- Research vessels participating in the collection of plankton material, 1953.

Month	Cruise number	Number vessels used	S. F. BAIRD	CREST	HORIZON	PAOLINA T.	E. W. SCRIPPS	YELLOWFIN
January	5301	3		X				X
February	5302	2		X		X		
March	5303	2		X			X	
Late Mar.	5303	1	X	-				
April	5304	5	X	X	X	X	X	
May	5305	4		X	X	X		X
June	5306	5		X	X	X	X	X
July	5307	2		X	X			
August	5308	2		X	X			
September	5309	2		X	X			
October	5310	2		X		X		
November	5311	1				X		
December	5312	2		X		X		

METHODS OF SAMPLING

The procedures followed in making plankton hauls and in standardizing the data have been described in previous papers in this series. Refer particularly to Special Scientific Report: Fisheries No. 102, pp. 4-6.

SEPARATION OF FISH EGGS AND LARVAE FROM PLANKTON SAMPLES

During 1953, a total of 1456 plankton hauls were made. Plankton volumes for these hauls are reported in "Zooplankton Volumes off the Pacific Coast, 1953", Special Scientific Report: Fisheries No. 132. Larger samples were divided into aliquot portions (2, 4, 8 or 16), one of which from each sample was examined for fish eggs and larvae. The majority of samples were examined in entirety. Information, by cruise, concerning the number of samples examined in entirety and those which were fractioned, is given in text table 3.

Text table 3.- Laboratory examination of the 1953 plankton samples

	Percent examined					No. samples examined
	6.25	12.5	25	50	100	
Cruise 5301			3	7	88	98
Cruise 5302			13	8	74	95
Cruise 5303			4	16	93	113
Cruise 5303 (Late)				2	61	63
Cruise 5304	1	3	7	35	162	208
Cruise 5305		1	12	68	140	221
Cruise 5306	1	4	11	70	117	203
Cruise 5307	1	5	17	28	71	122
Cruise 5308		2	12	34	70	118
Cruise 5309				5	37	42
Cruise 5310				1	70	71
Cruise 5311					20	20
Cruise 5312				3	79	82
Total	3	15	79	277	1082	1456

GUIDE TO TABLES

Table I. Standardized Haul Factors (S. Factors). Adjusts each haul to the comparable standard of 10 cubic meters of water strained per meter of depth fished (see Ahlstrom 1953: 4-6).

Excluded from the table, but included in a supplement, are three categories of hauls: 1) regular stations occupied only once, 2) special stations occupied only once, and 3) extra tows made at regular stations.

* . . . An asterisk follows an S. factor when there is some doubt about the haul being quantitative.

The following abbreviations appear in Table I:
NT - no net tow taken
ST - surface tow only
NQ - not quantitative

\- . . . A dash indicates that the station was not occupied during the cruise under which it appears.

Table II. Record of Sardine Eggs, 1953.
Number of normal eggs . . . Number of normally developing sardine eggs.

Total number of eggs. . . . Includes all sardine eggs taken in a sample, whether normal or abnormal. Sardine eggs were classified as abnormal when the embryos were stunted and misshapen. It is not known whether such abnormalities are caused by a diseased condition of the eggs, by mechanical injury during collection, or by other means.

The letters A through D are used to designate age categories of eggs:
A . . . Eggs spawned within 24 hours of collection.
B . . . Eggs spawned within 24.1 to 48 hours of collection.
C . . . Eggs spawned within 48.1 to 72 hours of collection.
D . . . Eggs spawned within 72.1 to 96 hours of collection.
Uncl. . Unclassified eggs. Deteriorating eggs that could not be classified with certainty.

* . . . Age categories considered to be completely represented in the sample.

n . . . Total number of eggs in sample.

Table III. Record of Sardine Larvae, 1953.

Midpoint of size classes . . . The larvae are grouped into size classes which have the following midpoints and ranges:

Midpoint (in mm.)	Range (in mm.)	Midpoint (in mm.)	Range (in mm.)
3.00	2.00-4.25	12.75	12.26-13.25
4.75	4.26-5.25	13.75	13.26-14.25
5.75	5.26-6.25	14.75	14.26-15.25
6.75	6.26-7.25	15.75	15.26-16.25
7.75	7.26-8.25	17.25	16.26-18.25
8.75	8.26-9.25	19.25	18.26-20.25
9.75	9.26-10.25	21.25	20.26-22.25
10.75	10.26-11.25	23.25	22.26-24.25
11.75	11.26-12.25		

Table IV. Record of Anchovy Larvae, 1953.

Same as above, except for the first category. The size class with midpoint of 2.50 mm. contains larvae from 1.76 to 3.25 mm. in length.

Table V. Record of the Larvae of Jack Mackerel (Trachurus symmetricus), 1953.

Midpoint of size classes . . . The larvae are grouped into size classes which have the following midpoints and ranges:

Midpoint (in mm.)	Range (in mm.)	Midpoint (in mm.)	Range (in mm.)
2.00	1.76-2.25	7.75	7.26-8.25
2.50	2.26-2.75	8.75	8.26-9.25
3.00	2.76-3.25	9.75	9.26-10.25
3.50	3.26-3.75	10.75	10.26-11.25
4.00	3.76-4.25	11.75	11.26-12.25
4.50	4.26-4.75	12.75	12.26-13.25
5.00	4.76-5.25	13.75	13.26-14.25
5.75	5.26-6.25	14.75	14.26-15.25
6.75	6.26-7.25	15.26 & larger	

Table VI. Record of the Larvae of Pacific Mackerel (Pneumatophorus diego), 1953.

The comments under Table V are applicable here, as well.

Table VII. Record of the Larvae of Hake (Merluccius productus), 1953

The standardized number of larvae are listed by station for all cruises on which they were taken during 1953. A dash indicates that the station was not occupied.

Table VIII. Record of the Larvae of Rockfish (Sebastodes spp.), 1953

The comments under Table VII are applicable here, as well.

Table I

Record of Standardized Haul Factors for Oblique Hauls made with Plankton Nets during Cruises 5301-5312, 1953

	Cruise and Month												
	5301	5302	5303	5303 Late	5304	5305	5306	5307	5308	5309	5310	5311	5312
Sta.	Jan.	Feb.	Mar.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
60.55	-	-	-	-	3.43	2.81	2.67	2.92	4.05	-	-	-	-
60.60	-	-	-	-	3.72	2.64	2.33	4.42	3.26	-	-	-	-
60.65	-	-	-	-	-	3.89	2.96	-	-	-	-	-	-
60.70	-	-	-	-	3.29	2.73	-	2.73	2.94	-	-	-	-
60.80	-	-	-	-	1.73	2.58	-	3.11	2.75	-	-	-	-
60.90	-	-	-	-	2.28	3.21	-	2.96	3.71	-	-	-	-
60.100	-	-	-	-	-	2.56	-	2.34	3.64	-	-	-	-
63.52	-	-	-	-	2.68	2.39	2.40	3.52	4.25	-	-	-	-
63.55	-	-	-	-	2.26	2.74	2.87	3.12	NS	-	-	-	-
63.60	-	-	-	-	-	3.81*	2.90	-	-	-	-	-	-
63.65	-	-	-	-	-	2.84	2.70	-	-	-	-	-	-
67.50	-	-	-	-	1.82	-	2.91	-	2.20	-	-	-	-
67.55	-	-	-	-	2.10	-	2.59	4.08	2.89	-	-	-	-
67.60	-	-	-	-	-	-	2.97	3.21	-	-	-	-	-
67.65	-	-	-	-	-	3.27*	2.82	2.97	2.83	-	-	-	-
70.51	-	-	-	-	2.87	2.79	2.21	3.18	NT	-	-	-	-
70.55	-	-	-	-	2.99	2.82*	2.90	2.58	2.28	-	-	-	-
70.60	-	-	-	-	2.07	2.62*	2.73	2.79	2.80	-	-	-	-
70.65	-	-	-	-	-	2.88	3.09	-	-	-	-	-	-
70.70	-	-	-	-	2.52	2.64	2.58	2.96	2.74	-	-	-	-
70.80	-	-	-	-	1.08*	2.70	2.88	3.51	2.75	-	-	-	-
70.90	-	-	-	-	3.12	2.66	2.84	-	-	-	-	-	-
70.100	-	-	-	-	-	2.06	2.65	-	-	-	-	-	-
73.50	-	-	-	-	2.20	2.48*	1.72	2.29	2.12	-	-	-	-
73.55	-	-	-	-	-	2.67*	2.52	2.66	-	-	-	-	-
73.60	-	-	-	-	2.88	2.80*	1.99	3.24	2.05	-	-	-	-
77.50	-	-	-	-	3.00	3.13	2.07	3.45	3.78	-	-	-	-
77.55	-	-	-	-	2.13	3.35	3.02	3.29	3.17	-	-	-	-
77.60	-	-	-	-	-	3.09	3.08	4.90	-	-	-	-	-
77.65	-	-	-	-	2.53	4.17*	3.40	3.14	3.07	-	-	-	-
80.51	1.96	1.71	2.49	-	2.89	2.55	2.66	2.77	1.70	-	-	-	-
80.55	NQ	2.51	2.75	-	3.03	3.28	2.86	2.53	3.15	-	-	-	-
80.60	3.05	2.90	4.64	-	2.48	1.73	2.65	5.85	3.71	-	-	-	-
80.70	2.83	2.16	3.63	-	2.78	3.14	2.65	2.79	2.92	-	-	-	-
80.80	2.43	3.94	3.48	-	3.31	3.06	2.91	2.94	3.20	-	-	-	-
80.90	2.26	-	2.74	-	2.75	2.80	2.88	2.65	2.35	-	-	-	-
80.100	2.24	-	2.46	-	2.33	1.31	2.66	3.71	2.34	-	-	-	-
80.110	-	-	-	-	3.05	3.28	-	-	-	-	-	-	-
80.120	-	-	-	-	2.46	2.40	-	-	-	-	-	-	-
80.130	-	-	-	-	2.79	3.02	-	-	-	-	-	-	-
80.145	-	-	-	-	1.69	2.71	-	-	-	-	-	-	-
80.160	-	-	-	-	2.63	3.04	-	-	-	-	-	-	-
81.46	-	-	-	-	-	-	-	-	-	1.45	-	2.92	2.42
82.47	-	-	-	-	-	-	-	-	-	3.90	2.93	2.59	2.24

Table I (cont'd)
Record of Standardized Haul Factors for Oblique Hauls made with Plankton Nets during Cruises 5301-5312, 1953

	Cruise and Month												
	5301	5302	5303	5303 Late	5304	5305	5306	5307	5308	5309	5310	5311	5312
Sta.	Jan.	Feb.	Mar.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
83.40	NT	ST	2.93	-	ST	1.99	2.30	1.78	0.49	7.60	7.29	1.29	2.35
83.43	2.17	2.59	2.95	-	3.12	2.44	3.25	3.39	2.22	3.42	2.15	3.27	2.71
83.48	1.40	1.79	2.90	-	2.20	1.39	3.59	2.05	2.38	2.46	1.90	1.57	3.32
83.51	2.75	2.03	3.31	-	2.29	2.96	3.14	2.14	2.75	2.92	1.44	3.33	2.64
83.55	2.82	3.41	3.25	-	3.34	2.44	3.48	2.99	3.18	2.95	2.52	2.52	2.96
83.60	3.05	3.30	3.68	-	3.01	2.88	3.66	3.39	3.66	-	-	2.36	2.29
83.70	-	-	-	-	2.99	2.43	3.20	-	-	-	-	-	-
83.80	-	-	-	-	2.69	1.66	3.04	-	-	-	-	-	-
83.90	-	-	-	-	2.91	2.86	3.06	-	-	-	-	-	-
85.39	2.45	3.20	2.19	-	2.60	3.06	3.10	3.12	2.37	2.98	-	2.00	2.38
85.40	2.90	3.79	3.28	-	2.77	3.23	2.88	2.64	2.55	2.91	-	3.13	2.67
85.45	2.68	2.73	3.29	-	2.55	2.56	2.48	3.04	2.59	2.90	-	2.90	2.46
85.50	3.12	1.97	2.89	-	2.38	2.35	3.03	3.28	2.22	2.58	-	3.96	2.56
85.55	3.38	3.89	3.04	-	2.86	NQ	3.02	3.15	1.84	2.91	-	1.92	-
85.60	3.17	2.00	3.04	-	3.09	3.04	2.51	4.33	2.57	-	-	1.85	-
87.35	2.73	2.35	2.94	-	2.92	1.45	2.97	NQ	2.18	2.19	-	3.60	2.46
87.40	2.73	2.96	3.46	-	3.04	1.52	2.90	3.44	3.73	2.13	-	2.56	2.52
87.45	NT	2.86	2.98	-	2.27	1.90	2.83	2.51	2.76	2.54	-	3.82	2.53
87.50	NT	1.01	1.97	-	2.59	1.62	2.62	2.16	2.00	2.54	-	NS	2.38
87.55	2.46	3.01	2.76	-	3.14	2.16	2.92	2.93	1.51	2.16	-	3.59	2.52
87.60	3.09	3.23	-	-	1.90	2.90	3.47	3.05	1.82	2.08	-	2.48	-
87.70	-	-	-	-	2.57	2.00	3.34	-	-	-	-	-	-
87.80	-	-	-	-	2.74	2.27	NS	-	-	-	-	-	-
87.90	-	-	-	-	2.97	2.63	2.79	-	-	-	-	-	-
90.28	2.05	2.46	2.97	-	3.21	1.34	2.32	2.66	NT	-	3.09	-	2.21
90.30	2.49	2.79	2.91	-	2.50	1.21	2.50	2.95	2.56	-	2.91	-	2.32
90.37	2.46	2.74	2.95	-	1.78	-	2.77	2.75	2.84	-	2.94	-	2.63
90.45	2.85	2.80	3.39	-	2.84	3.25	3.14	2.79	3.03	-	2.89	-	2.70
90.50	-	-	3.19	-	NS	2.90	3.33	3.27	2.48	-	3.26	-	2.43
90.53	3.18	2.17	-	-	-	-	-	-	-	-	-	-	-
90.55	-	-	3.23	-	2.74	2.71	3.16	4.35	3.18	-	3.23	-	2.67
90.60	2.80	2.23	3.80	-	3.07	2.95	3.25	3.44	2.88	-	2.88	-	2.94
90.70	3.16	2.48	3.38	-	2.28	1.88	NQ	4.38	2.88	-	3.25	-	-
90.80	3.69	3.30	3.02	-	3.16	3.76	2.86	-	-	-	-	-	-
90.90	2.54	-	3.16	-	2.83	2.46	3.49	-	-	-	-	-	-
90.100	-	-	-	-	2.42	2.81	3.28*	-	-	-	-	-	-
90.110	-	-	-	-	1.82	2.86	-	-	-	-	-	-	-
90.120	-	-	-	-	3.08	2.44	-	-	-	-	-	-	-
90.130	-	-	-	-	3.36	3.06	-	-	-	-	-	-	-
90.145	-	-	-	-	2.54	3.77	-	-	-	-	-	-	-
90.160	-	-	-	-	2.59	1.91	-	-	-	-	-	-	-
93.27	2.25	3.34	NS	-	3.10	2.30	2.78	2.12	2.59	-	3.37	-	2.35
93.30	2.78	3.07	2.97	-	2.79	1.90	2.65	2.99	3.33	-	2.73	-	2.53

Table I (cont'd)

Record of Standardized Haul Factors for Oblique Hauls made with Plankton Nets during Cruises 5301-5312, 1953

	Cruise and Month												
	5301	5302	5303	5303 Late	5304	5305	5306	5307	5308	5309	5310	5311	5312
Sta.	Jan.	Feb.	Mar.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
93.35	-	-	-	-	2.99	2.09	3.30	2.52	2.73	-	-	-	-
93.40	2.75	3.00	NQ	-	2.89	2.21	3.28	2.47	2.74	-	2.16	-	2.94
93.45	-	-	-	-	3.14	2.13	2.88	3.07	-	-	-	-	-
93.50	3.47	2.74	3.19	-	3.43	2.64	2.43	3.69	2.88	-	3.07	-	3.07
93.55	-	-	-	-	3.25	-	3.00	-	-	-	-	-	-
93.60	NQ	2.64	-	-	2.51	2.36	3.04	-	-	-	-	-	-
93.70	-	-	-	-	3.14	-	2.64	-	-	-	-	-	-
93.80	-	-	-	-	3.64	-	2.04	-	-	-	-	-	-
93.90	-	-	-	-	3.33	-	3.23	-	-	-	-	-	-
97.30	1.62	2.06	2.90	-	2.83	1.87	2.37	1.48	2.45	-	2.26	-	2.85
97.32	3.38	2.85	-	-	-	-	-	-	-	-	-	-	-
97.35	-	-	2.92	-	3.23	2.48	3.45	3.01	2.36	-	2.82	-	2.57
97.40	3.04	2.97	3.13	-	3.11	2.85	3.22	2.83	2.28	-	2.95	-	2.59
97.45	-	-	-	-	3.85	3.31	3.14	3.33	-	-	-	-	-
97.50	3.18	2.41	NT	-	3.20	3.23	3.41	3.12	3.26	-	2.80	-	2.42
97.60	3.59	3.20	-	-	3.15	3.28	2.81	-	-	-	-	-	-
97.70	-	-	-	-	2.99	2.82	3.00	-	-	-	-	-	-
97.80	-	-	-	-	3.20	-	3.26	-	-	-	-	-	-
97.90	-	-	-	-	3.41	-	2.63	-	-	-	-	-	-
100.29	2.64	2.82	2.54	-	2.81	2.63	3.22	2.60	2.77	-	2.71	-	2.23
100.30	2.98	2.21	2.78	-	3.13	2.56	3.14	2.91	3.36	-	2.99	-	2.69
100.35	-	-	-	-	3.11	2.55	2.05	2.73	2.68	-	-	-	-
100.40	2.73	3.22	2.86	-	3.44	3.06	2.83	3.02	3.61	-	2.69	-	2.32
100.45	-	-	-	-	3.39	3.16	3.04	3.31	-	-	-	-	-
100.50	3.15	2.42	2.85	-	3.06	2.47	3.07	3.55	3.12	-	2.89	-	3.01
100.55	-	-	-	-	3.50	3.26	2.29	-	3.31	-	-	-	-
100.60	2.92	3.27	2.68	-	2.84	3.06	3.55	3.08	3.56	-	2.65	-	2.99
100.70	3.52	3.08	2.90	-	2.81	3.20	2.33	3.23	3.28	-	2.92	-	2.79
100.80	2.98	3.21	3.00	-	2.71	3.00	3.13	2.43	3.72	-	-	-	2.43
100.90	3.06	-	-	-	2.76	3.03	3.55	-	-	-	-	-	-
103.30	-	-	-	-	2.93	2.34	3.34	2.13	2.16	-	3.37	-	2.39
103.35	-	-	-	-	2.79	2.89	2.99	3.08	3.33	-	3.81	-	2.75
103.40	-	-	-	-	2.73	2.99	3.04	2.94	2.82	-	3.39	-	2.45
103.45	-	-	-	-	2.50	2.60	3.14	-	-	-	-	-	-
103.50	-	-	-	-	2.71	2.87	3.06	-	-	-	-	-	-
103.55	-	-	-	-	3.03	3.16	2.10	-	-	-	-	-	-
103.60	-	-	-	-	3.11	2.85	2.58	-	-	-	-	-	-
103.70	-	-	-	-	2.89	2.76	3.04	-	-	-	-	-	-
103.80	-	-	-	-	2.64	2.44	2.80	-	-	-	-	-	-
103.90	-	-	-	-	2.69	2.99	2.43	-	-	-	-	-	-
105.32	2.12	2.40	2.99	-	-	-	-	-	-	-	-	-	-
105.35	2.12	2.91	2.13	-	-	-	-	-	-	-	-	-	-
105.40	3.47	3.15	2.64	-	-	-	-	-	-	-	-	-	-

Table I (cont'd)
Record of Standardized Haul Factors for Oblique Hauls made with Plankton Nets during Cruises 5301-5312, 1953

	Cruise and Month												
	5301	5302	5303	5303 Late	5304	5305	5306	5307	5308	5309	5310	5311	5312
Sta.	Jan.	Feb.	Mar.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
105.50	3.36	2.86	2.77	-	-	-	-	-	-	-	-	-	-
105.60	4.35	3.07	2.77	-	-	-	-	-	-	-	-	-	-
105.70	3.78	-	2.71	-	-	-	-	-	-	-	-	-	-
105.80	4.63	-	2.89	-	-	-	-	-	-	-	-	-	-
107.32	-	-	-	-	3.08	3.06	2.47	2.26	2.23	-	4.04	-	2.15
107.35	-	-	-	-	2.71	2.60	2.85	2.85	3.40	-	3.48	-	2.46
107.40	-	-	-	-	3.09	3.58	2.34	2.59	2.82	-	3.52	-	2.39
107.45	-	-	-	-	3.04	3.07	2.37	-	-	-	-	-	-
107.50	-	-	-	-	3.08	3.10	2.53	-	-	-	-	-	-
107.55	-	-	-	-	3.37	3.38	2.78	-	-	-	-	-	-
107.60	-	-	-	-	2.79	3.27	2.23	-	-	-	-	-	-
107.70	-	-	-	-	2.72	2.99	2.96	-	-	-	-	-	-
107.80	-	-	-	-	2.80	2.82	-	-	-	-	-	-	-
107.90	-	-	-	-	3.29	3.18	-	-	-	-	-	-	-
110.33	-	2.96	2.07	-	2.97	NQ	2.43	2.32	2.57	-	3.68	-	1.91
110.35	-	2.58	2.88	-	2.41	3.40	2.77	3.56	2.54	-	3.66	-	2.34
110.40	-	2.78	2.80	-	4.18	2.85	3.09	2.62	3.39	-	3.88	-	2.23
110.45	-	-	-	-	3.73	2.62	2.90	-	-	-	-	-	-
110.50	2.82	3.12	2.75	-	3.20	2.78	2.81	2.94	3.10	-	3.93	-	2.85
110.55	-	-	-	-	2.99	2.97	2.87	-	-	-	-	-	-
110.60	3.06	3.03	2.57	-	3.32	2.88	2.50	2.65	3.51	-	3.19	-	2.69
110.70	2.08	-	2.80	-	3.20	2.77	2.65	-	-	-	-	-	-
110.80	2.33	-	-	-	2.63	2.41	-	-	-	-	-	-	-
110.90	-	-	-	-	3.06	2.59	-	-	-	-	-	-	-
113.30	-	2.25	1.89	1.62	1.52	2.29	3.51	4.12	3.28	2.22	2.72	-	2.81
113.35	2.21	*2.67	2.71	2.87	2.01	2.68	2.57	2.22	2.83	2.79	3.42	-	2.23
113.40	-	2.93	2.41	2.43	3.16	3.13	2.64	2.01	3.71	-	3.26	-	2.17
113.45	-	-	2.52	3.53	2.93	2.98	2.62	-	-	-	-	-	-
113.50	2.79	2.47	2.27	2.51	3.05	2.33	2.95	-	-	-	-	-	-
113.55	-	-	3.15	2.79	2.93	3.08	2.80	-	-	-	-	-	-
113.60	-	2.56	3.36	2.91	3.11	2.37	2.37	-	-	-	-	-	-
113.70	-	-	-	2.78	2.78	2.91	2.69	-	-	-	-	-	-
117.26	-	2.38	1.89	1.15	1.63	2.34	2.62	1.55	2.89	1.15	2.91	-	1.81
117.30	-	2.64	2.03	1.91	1.60	2.22	2.44	1.85	3.21	1.81	2.72	-	1.86
117.35	-	3.00	2.88	1.94	2.70	2.37	2.70	3.44	2.39	2.76	3.23	-	-
117.40	3.14	2.94	2.80	2.99	2.89	2.65	2.63	2.45	2.48	2.94	3.15	-	-
117.45	-	-	2.70	2.57	2.90	2.89	2.11	-	-	-	-	-	-
117.50	2.76	2.65	3.14	3.41	3.17	2.75	2.78	-	-	-	-	-	-
117.55	-	-	3.00	2.92	2.84	2.62	3.22	-	-	-	-	-	-
117.60	-	3.25	2.95	2.95	2.59	2.38	2.89	-	-	-	-	-	-
117.70	-	-	-	3.40	2.91	2.52	2.82	-	-	-	-	-	-
120.25	1.96	2.03	2.19	1.77	1.44	1.88	2.32	3.20	2.58	1.22	2.94	-	2.29
120.30	2.82	2.40	2.67	1.57	1.34	2.70	2.72	3.23	2.97	2.96	2.70	-	1.79

Table I (cont'd)
Record of Standardized Haul Factors for Oblique Hauls made with Plankton Nets during Cruises 5301-5312, 1953

	Cruise and Month												
	5301	5302	5303	5303 Late	5304	5305	5306	5307	5308	5309	5310	5311	5312
Sta.	Jan.	Feb.	Mar.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
120.35	2.26	2.68	2.68	1.71	1.60	3.24	2.47	1.90	3.13	1.94	3.41	-	2.94
120.40	-	-	2.06	1.39	1.43	2.02	1.75	-	-	-	-	-	-
120.45	2.56	2.79	2.84	3.24	2.73	2.76	3.16	2.54	3.79	-	3.59	-	2.67
120.50	2.65	2.89	2.55	2.49	2.82	2.96	2.43	2.43	3.54	-	3.57	-	2.66
120.55	-	-	2.89	2.62	2.85	2.68	2.38	-	-	-	-	-	-
120.60	2.43	2.70	2.91	3.04	2.70	2.76	2.51	2.53	3.27	-	3.97	-	2.31
120.70	2.42	2.95	-	2.92	1.81	2.87	1.59	2.94	2.69	-	3.61	-	2.40
120.80	2.66	3.13	-	2.38	2.67	2.45	2.60	2.58	2.72	-	3.12	-	2.54
120.90	-	-	-	3.34	2.52	2.66	1.84	2.80	2.77	-	3.38	-	2.53
123.37	2.25	2.17	2.57	1.86	1.37	2.24	2.35	1.89	2.19	-	2.48	-	2.97
123.40	-	2.74	2.74	3.44	2.99	2.28	2.63	2.00	2.64	-	3.24	-	3.11
123.45	-	3.02	2.62	3.22	2.50	2.38	2.98	3.61	3.82	-	-	-	-
123.50	-	3.04	3.01	2.88	2.85	3.04	2.98	2.98	3.11	-	3.64	-	2.23
123.55	-	-	2.61	2.87	2.29	2.84	2.89	-	-	-	-	-	-
123.60	-	-	2.83	2.72	2.80	2.28	2.24	-	-	-	-	-	-
127.34	1.51	2.18	1.45	1.49	1.59	2.60	3.02	3.31	2.82	-	2.27	-	2.31
127.40	-	2.81	2.72	3.74	3.18	2.59	2.36	2.44	2.89	-	2.22	-	2.87
127.45	-	2.73	2.73	2.83	2.78	2.47	2.55	2.56	3.68	-	-	-	-
127.50	-	3.99	2.71	3.01	2.26	2.11	2.29	1.90	3.13	-	4.00	-	2.69
127.55	-	-	2.45	3.11	2.40	2.69	2.91	-	-	-	-	-	-
127.60	-	-	3.13	2.66	2.75	2.94	2.64	-	-	-	-	-	-
130.30	-	2.73	1.73	1.35	1.39	1.59	1.51	NS	3.54	-	3.27	-	1.97
130.35	2.23	2.65	2.86	3.09	2.64	2.37	2.46	2.84	3.56	-	3.54	-	2.37
130.40	2.57	2.54	2.68	3.19	2.73	2.64	2.18	2.31	3.60	-	4.09	-	2.55
130.45	-	2.76	3.09	3.47	2.65	3.38	2.82	2.12	2.95	-	-	-	-
130.50	NT	2.81	2.77	3.13	2.73	2.64	2.85	2.04	3.97	-	3.66	-	2.29
130.55	-	-	2.87	3.30	2.21	3.12	2.46	-	-	-	-	-	-
130.60	3.06	2.93	2.91	3.44	2.65	2.62	2.24	2.95	3.85	-	NQ	-	2.43
133.25	2.09	2.15	1.34	1.48	1.89	2.29	1.90	1.92	2.02	-	3.20	-	1.85
133.30	2.28	2.62	2.51	1.75	3.20	2.14	2.75	1.89	2.18	-	3.10	-	1.84
133.35	-	-	2.82	2.43	3.18	2.80	3.03	2.78	3.15	-	-	-	-
133.40	2.20	2.84	2.66	3.60	3.21	2.42	3.69	2.30	3.18	-	3.55	-	2.67
133.45	-	-	2.85	3.52	2.90	2.06	3.85	-	-	-	-	-	-
133.50	2.38	-	2.77	2.90	3.67	2.69	3.22	-	-	-	-	-	-
133.55	-	-	-	3.38	3.04	1.97	-	-	-	-	-	-	-
133.60	-	-	-	2.96	3.06	2.75	-	-	-	-	-	-	-
137.23	2.09	2.21	2.55	1.91	1.33	1.63	2.73	2.34	2.48	-	3.34	-	1.91
137.30	2.21	2.59	2.67	2.34	2.98	2.41	3.10	2.65	2.70	-	NS	-	2.05
137.35	-	-	2.49	2.41	2.94	2.45	2.46	-	-	-	-	-	-
137.40	2.53	-	2.34	2.90	2.79	3.07	2.76	-	-	-	-	-	-
137.45	-	-	2.87	2.41	3.96	3.18	2.25	-	-	-	-	-	-
137.50	2.28	-	2.79	2.66	3.16	2.71	2.39	-	-	-	-	-	-
137.55	-	-	-	2.59	2.56	2.75	-	-	-	-	-	-	-
137.60	-	-	-	3.24	2.90	3.16	-	-	-	-	-	-	-

Table I (Supplement)
Record of Standardized Haul Factors for Oblique Hauls
made with Plankton Nets during Cruises 5301-5312, 1953

I-a:
Regular Stations Occupied Only Once

Station	Month	Haul Factor
60.120	May	2.40
67.53	July	3.45
70.110	May	2.14
70.120	May	2.49
80.65	June	3.38
80.138	May	2.62
80.153	May	3.01
83.65	June	3.83
87.65	June	4.71
90.35	May	1.05*
90.41	May	2.42
90.58	August	4.45
90.65	June	3.42
90.139	May	2.81
90.153	May	2.46
93.65	June	2.30
97.38	August	2.54
97.55	April	2.87
97.65	June	2.83
100.65	June	3.32
100.100	June	2.69
103.65	June	3.10
107.65	June	2.35
110.65	June	2.84
113.65	June	2.85
115.26	September	2.16
115.30	September	1.98
115.35	September	1.12
117.65	June	2.00
120.65	June	2.55
140.30	January	1.98
140.35	January	2.69
140.40	January	2.66
143.26	January	2.47
143.30	January	2.66
143.35	January	2.30
147.20	January	1.99
147.25	January	2.62
147.30	January	2.37
150.19	January	1.63
150.25	January	2.66
150.30	January	2.72
150.40	January	2.42

I-b:
Special Stations Occupied Only Once

Station	Month	Haul Factor
$118^{5}25$	September	1.33
$118^{5}30$	September	2.17
$118^{5}35$	September	1.65
119.42	September	2.02
120.31	September	2.34
120.43	September	2.39
121.30	September	1.44
121.34	September	1.44
121.41	September	2.73
$121^{1}26$	September	1.20
$121^{5}28$	September	1.07
$118^{3}33$	December	2.63
$121^{3}31$	December	2.00

I-c:
Extra Tows Made at Regular Stations

Station	Month	Haul Factor
85.40	January	2.88
85.45	January	2.98
83.40	April	1.06
83.43	April	4.81
83.48	April	3.78
85.39	April	3.52
85.40	April	3.62
85.45	April	3.01
85.50	April	2.58
85.55	April	3.17
87.35	April	3.28
83.43	May	1.88
83.48	May	2.18
83.51	May	1.84
83.55	May	2.56
83.60	May	4.07
85.39	May	2.48
85.40	May	2.21
85.45	May	4.76
85.50	May	2.64
85.55	May	2.14
85.60	May	2.84
87.35	May	3.25
87.40	May	2.48
87.45	May	2.90

* - Stations 90.34 and 90.37 combined.

Table I (Supplement)
Record of Standardized Haul Factors for Oblique Hauls
made with Plankton Nets during Cruises 5301-5312, 1953

I-c (cont'd):

Extra Tows Made at Regular Stations

Station	Month	Haul Factor
87.50	May	4.44
87.55	May	3.35
87.60	May	2.92
83.51	June	2.86
85.39	June	2.17
85.45	June	2.30
85.50	June	3.19
87.35	June	2.74
87.40	June	2.64
87.45	June	2.83
120.30	September	2.03

Table II
Record of Sardine Eggs, 1953

Station	Number of Normal Eggs A	B	C	D	Total Number of Eggs A	B	C	D	Uncl.	n
Cruise 5301:										
120.25	0	16	-	-	0*	29*	-	-	0	29
Cruise 5302:										
83.43	0	0	0	-	3*	0*	0*	-	0	3
83.51	0	0	2	0	0*	0*	10*	2*	6	18
100.29	0	0	0	0	0	0*	0*	3*	0	3
105.32	0	216	0	-	0*	271*	0*	-	0	271
113.35	0	0	3	-	0	0*	13*	-	0	13
113.60	3	0	-	-	5*	0*	-	-	5	10
117.26	0	0	0	-	0	0*	2*	-	0	2
117.50	1007	244	0	-	2936	466*	0*	-	689	4091
120.25	1989	755	252	-	4442*	966*	317*	-	41	5766
120.45	0	0	0	-	0	3*	0*	-	0	3
120.50	118	69	-	-	237*	98*	-	-	14	349
127.34	15	6	-	-	72*	15*	-	-	22	109
127.40	20	219	-	-	28	346*	-	-	62	436
130.35	0	53	5	-	0	69*	5*	-	5	79
130.40	8	0	-	-	10	0*	-	-	2	12
Total	3160	1562	262	0	7733	2234	347	5	846	11165
Cruise 5303:										
105.50	0	17	11	-	0*	22*	11*	-	0	33
105.70	5	0	0	-	5*	0*	0*	-	0	5
110.50	3	3	8	-	3*	8*	16*	-	0	27
110.60	5	0	10	-	5	0*	23*	-	3	31
110.70	0	50	0	-	0	67*	0*	-	0	67
113.45	0	2	0	-	0*	5*	0*	-	0	5
113.50	86	30	11	-	1884*	184*	134*	-	1031	3233
113.55	16	3	3	-	63*	10*	13	-	9	95
113.60	0	24	329	40	0	47*	380*	47	0	474
117.45	3	11	502	14	3	19*	1231*	30*	54	1337
117.50	0	3	3	-	0	3*	22*	-	3	28
117.55	3	0	-	-	3*	3*	-	-	3	9
117.60	0	24	3	-	0*	30*	3*	-	0	33
120.40	0	2	0	-	0	4*	2*	-	4	10
120.55	0	6	0	-	0*	6*	3*	-	0	9
123.37	0	0	8	-	0*	0*	8*	-	0	8
123.45	0	8	0	-	0*	21*	0*	-	0	21
130.40	0	27	-	-	0*	32*	-	-	0	32
Total	121	210	888	54	1966	461	1846	77	1107	5457

Table II (cont'd)
Record of Sardine Eggs, 1953

Station	Number of Normal Eggs A	B	C	D	Total Number of Eggs A	B	C	D	Uncl.	n
Cruise 5303 (Late March):										
113.45	C	0	4	-	0	0*	4*	-	0	4
113.50	106	141	5	-	156*	206*	10*	-	0	372
113.55	50	50	3	-	84*	89*	3*	-	0	176
120.40	0	67	0	14	0*	234*	0*	83*	86	403
123.37	0	91	206	39	0	221*	355*	76*	48	700
123.40	10	3	0	-	10*	3*	0*	-	0	13
123.45	0	0	0	-	16*	0*	0*	-	0	16
123.50	0	9	167	-	0*	17*	219*	-	0	236
127.45	0	0	0	-	14*	0*	6*	-	0	20
130.50	0	0	3	-	0*	19*	3*	-	0	22
Total	166	361	388	53	280	789	600	159	134	1962
Cruise 5304:										
85.40	0	0	0	3	0	0*	0*	3	0	3
107.40	0	201	22	-	3*	365*	37*	-	0	405
107.45	0	0	0	-	79*	3*	3*	-	21	106
110.50	6	0	0	-	10*	0*	0*	-	3	13
110.55	3	81	209	-	3*	102*	233*	-	0	338
110.60	7	17	252	-	33*	30*	315*	-	7	385
113.35	0	4	66	2	0	28*	127*	6	18	179
113.40	0	3	3	0	0	13*	19*	3	10	45
113.45	0	12	185	18	0	38*	378*	64*	6	486
117.50	0	63	124	82	0	158*	206*	92*	6	462
117.55	0	0	0	40	0	0*	0*	62	0	62
120.25	6	377	124	14	14	593*	170*	37*	147	961
120.40	0	0	0	0	0	0*	0*	1*	0	1
120.45	0	0	25	-	0*	0*	25*	-	22	47
120.50	14	640	369	-	28*	1449*	990*	-	451	2918
120.55	9	185	217	-	17*	242*	276*	-	11	546
120.60	0	14	378	-	0*	35*	575*	-	11	621
123.40	0	12	3	-	9*	24*	6*	-	0	39
123.45	0	0	25	0	0	8*	35*	2*	0	45
127.45	0	25	6	-	0*	28*	6*	-	0	34
Total	45	1634	2008	159	196	3116	3401	270	713	7696

Table II (cont'd)
Record of Sardine Eggs, 1953

Station	Number of Normal Eggs A	B	C	D	Total Number of Eggs A	B	C	D	Uncl.	n
Cruise 5305:										
83.43	0	0	0	10	0*	0*	0*	10	0	10
93.27	0	5	0	-	0*	5*	0*	-	0	5
93.50	5	0	0	-	5*	0*	0*	-	0	5
100.50	0	2	-	-	0*	2*	-	-	0	2
103.30	292	0	0	-	540*	0*	0*	-	0	540
110.50	28	225	156	-	83*	292*	181	-	14	570
113.40	0	3	3	-	0	3*	3*	-	0	6
113.45	0	0	3	3	0	0*	3*	3*	0	6
117.45	133	225	17	0	260*	277*	29*	0*	0	566
117.50	6	316	319	-	6*	363*	363*	-	0	732
117.55	0	10	3	-	0*	10*	5*	-	0	15
117.60	0	12	40	-	0*	57*	140*	-	26	223
120.25	2	0	0	-	2*	0*	0*	-	0	2
120.50	0	59	349	-	0	118*	823*	-	47	988
120.55	0	0	0	-	0*	0*	3*	-	0	3
123.40	0	0	0	9	0*	0*	0*	14*	0	14
123.45	0	0	2	-	0*	0*	5*	-	0	5
123.50	12	12	3	-	15*	12*	3*	-	3	33
127.40	0	5	0	-	0	5*	0*	-	0	5
127.45	35	37	49	-	86*	47*	82*	-	0	215
130.40	0	8	0	-	0*	8*	0*	-	0	8
130.45	7	0	3	-	10*	0*	3*	-	0	13
130.50	3	5	13	-	5*	10*	26*	-	0	41
Total	523	924	960	22	1012	1209	1669	27	90	4007
Cruise 5306:										
83.51	6	0	0	-	6*	0*	0*	-	0	6
85.50	0	3	0	0	0*	3*	0*	0*	0	3
93.35	0	3	0	-	0	3*	0*	-	0	3
97.35	0	3	0	-	0	3*	0*	-	0	3
103.30	0	3	10	7	0*	3*	13*	7*	0	23
113.55	0	0	-	-	6*	3*	-	-	3	12
113.60	38	270	156	-	109	436*	228*	-	14	787
117.40	74	0	0	-	150	0*	0*	-	0	150
117.45	0	131	0	-	0*	217*	0*	-	0	217
117.50	0	17	0	-	0*	17*	0*	-	0	17
117.55	0	13	29	-	0*	19*	45	-	0	64
117.60	0	0	3	-	0*	0*	3	-	0	3
120.25	88	0	-	-	130*	0*	-	-	0	130
120.40	0	0	2	-	0*	0*	2*	-	0	2
120.50	0	0	2	-	0*	0*	2	-	0	2
127.50	0	0	5	-	0*	0*	5*	-	0	5
133.35	0	12	0	-	0	12*	0*	-	0	12
137.23	11	6	-	-	11*	6*	-	-	0	17
Total	217	461	207	7	412	722	298	7	17	1456

Table II (cont'd)
Record of Sardine Eggs, 1953

Station	Number of Normal Eggs A	B	C	D	Total Number of Eggs A	B	C	D	Uncl.	n
Cruise 5307:										
93.27	216	0	2	-	456	0*	4*	-	2	462
120.35	220	638	-	-	4043	1315*	-	-	395	5753
120.45	0	107	36	-	0	132*	41*	-	2	175
123.40	706	90	-	-	1602*	140*	-	-	234	1976
127.34	20760	556	-	-	30611*	900*	-	-	847	32358
137.23	374	-	-	-	665*	-	-	-	23	688
Total	22276	1391	38	0	37377	2487	45	0	1503	41412
Cruise 5308:										
117.26	0	0	35	-	0*	0*	40*	-	0	40
120.25	52	57	-	-	175*	178*	-	-	75	428
120.30	0	3	-	-	0	15*	-	-	104	119
120.35	0	26342	100	-	0	30098*	100*	-	0	30198
123.37	0	0	0	0	0	0*	0*	2*	0	2
123.40	0	3	5	-	0	3*	8	-	0	11
123.50	0	28	-	-	0*	50*	-	-	9	59
127.34	0	0	-	-	17	0*	-	-	34	51
127.40	0	0	3	-	6	0*	3*	-	17	26
133.35	0	113	-	-	0*	334*	-	-	76	410
137.23	25	0	-	-	47	20*	-	-	22	89
Total	77	26546	143	0	245	30698	151	2	337	31433
Cruise 5309:										
117.26	0	0	0	-	0	0*	1	-	0	1
117.40	482	3	-	-	694*	3*	-	-	44	741
120.25	6	92	-	-	11	130*	-	-	0	141
120.30	6	592	-	-	6	1095*	-	-	30	1131
120.30E	0	6	684	-	6*	6*	788*	-	0	800
120.31	157	494	-	-	227*	796*	-	-	12	1035
120.35	351	0	-	-	471*	6*	-	-	0	477
121.30	27	0	-	-	46	0*	-	-	9	55
121.34	43	-	-	-	78*	-	-	-	1	79
121 1/2 26	29	92	-	-	41*	101*	-	-	0	142
121 5/2 28	1	-	-	-	2*	-	-	-	1	3
Total	1102	1279	684	0	1582	2137	789	0	97	4605

Table II (cont'd)
Record of Sardine Eggs, 1953

Station	Number of Normal Eggs A	B	C	D	Total Number of Eggs A	B	C	D	Uncl.	n
Cruise 5310:										
120.25	0	12	0	-	0	29*	9*	-	0	38
123.37	191	-	-	-	216*	-	-	-	5	221
127.34	18	-	-	-	57*	-	-	-	0	57
Total	209	12	0	0	273	29	9	0	5	316
Cruise 5312:										
113.30	59	0	-	-	96*	3*	-	-	8	107
120.30	9	0	-	-	23*	0*	-	-	0	23
120.35	0	47	6	-	0	112*	44	-	15	171
121.31	130	12	-	-	268*	14*	-	-	14	296
Total	198	59	6	0	387	129	44	0	37	597

Table III
Record of Sardine Larvae, 1953

Station	Midpoint of Size Class (in mm.)																		
	3.00	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5301:																			
110.60								3.1											3.1
120.25	15.8																		15.8
123.37	36.0																		36.0
127.34						1.5													1.5
137.23	2.1	4.2		2.1															8.4
137.30	6.6	28.7	8.8	2.2															46.3
140.30										2.0									2.0
143.26					2.5														2.5
143.30					10.6	10.6		42.5	10.6										74.3
143.35													2.3						2.3
150.25					5.3	5.3	2.7	8.0	2.7			2.7							26.7
150.30		2.7	5.4	10.9	21.7	19.1	13.6	24.5	8.1	5.4	10.9	2.7							125.0
150.40										7.3	2.4	2.4	2.4						14.5
Total	60.5	35.6	14.2	15.2	40.1	36.5	16.3	78.1	21.4	14.7	13.3	7.8	4.7	0	0	0	0	0	358.4
Cruise 5302:																			
83.43	2.6																		2.6
110.33		5.9																	5.9
113.30	2.2		4.4	2.2		2.2													11.0
113.35			2.7			2.7	2.7		5.3										13.4
117.50		10.6																	10.6
120.25	24.3	89.3																	113.6
120.30		2.4	2.4		7.2			4.8	2.4										19.2
120.45	5.6	19.6	11.2	5.6	11.2	14.0	14.0	5.6		2.8									89.6
120.50	14.5	49.1	54.9	106.9	92.5	26.0	2.9			2.9									349.7
120.70			11.8	14.7	3.0	3.0													32.5
123.45										3.0									3.0
123.50			3.0																3.0
127.34		19.6	26.2	24.0	6.5	2.2	2.2		2.2										82.9
127.40										2.8	8.4								11.2
130.30				2.7	2.7														5.4
130.35							5.3			5.3									10.6
130.40				2.5															2.5
137.23		4.4	39.8	172.4	216.6	101.6	17.7	13.2	4.4	13.2		4.4							587.7
Total	49.2	200.9	156.4	331.0	339.7	151.7	44.8	23.6	14.3	30.0	8.4	4.4							1354.4

Table III
Record of Sardine Larvae, 1953

Station	Midpoint of Size Class (in mm.) 3.00	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5303:																			
105.50		16.6																	16.6
105.70			5.4																5.4
110.50		2.8	8.2	5.5		2.8		2.8											22.1
110.60	2.6	2.6	2.6	2.6				2.6				2.6							15.6
113.50											2.3								2.3
113.55	3.2	3.2								6.3									12.7
113.60	80.7	13.4	3.4	10.1	3.4	13.5		20.2	10.1	36.9	6.7	3.4							201.8
117.45	86.4	2.7										2.7						8.1	99.9
117.50				3.1					12.6	25.1	22.0	3.1	3.1		3.1				72.1
117.55	3.0	45.0	75.0								3.0								126.0
117.60	14.8	218.2	17.8	6.0		3.0													259.8
120.40	35.0	2.1	2.1	4.2	6.3	4.2			2.1	2.1	4.2								62.2
120.45	2.8					8.5	2.8	8.5	2.8	11.4		5.6		2.8					45.2
120.50											2.6	2.6							5.2
123.37	23.2	38.6	2.6	2.6	5.2	5.1	2.6	7.7	38.5	35.9	43.7	28.2	10.3	10.3					254.5
123.40								5.5	11.0	8.2	10.9	2.7							38.3
127.34		92.8	69.6	34.8	34.8	11.6	5.8	5.8											255.2
127.40		21.8			76.2		10.9												108.9
127.45	10.9				2.7														13.6
130.30					1.7														1.7
130.45			3.1																3.1
133.25			1.3	17.4	30.9	32.2	4.0	6.7	2.6	1.3	5.3	2.7	5.3	6.7		1.3			117.7
133.30				10.0			2.5							2.5					15.0
137.23		2.6		15.3	53.5	45.9	20.4	17.8	12.8	5.1								2.6	176.0
137.30	5.3	5.3		8.0	2.7				5.3	10.7	10.7	5.4	10.6	29.3	2.7	2.7			98.7
137.35						2.5		10.0	7.5	2.5	2.5	2.5							27.5
137.40										14.0	11.7	7.0	4.6						37.3
Total	267.9	467.7	191.1	119.6	217.3	129.3	49.0	87.6	105.3	159.5	125.6	68.5	33.9	51.6	5.8	4.0		10.7	2094.4

Table III (cont'd)
Record of Sardine Larvae, 1953

Station	Midpoint of Size Class (in mm.)																	
	3.00	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5303 (Late March):																			
113.40									2.4										2.4
113.55		2.8											2.8						5.6
113.60	2.9	32.0																	34.9
113.70	13.9	200.1	111.2	13.9	2.8		2.8												344.7
117.55	2.9					5.8	2.9	5.8	2.9										20.3
117.60			32.4	14.8	11.8	6.0	23.6	11.8											100.4
117.70						3.4	6.8												10.2
120.25		5.3	5.3																10.6
120.40	2.8																		2.8
120.45		3.2																	3.2
120.55												2.6							2.6
120.60						3.0					6.1								9.1
123.37	11.2	9.3	1.9									1.9		1.9					26.2
123.50	17.3																		17.3
123.55	2.9	2.9																	5.8
127.34		3.0	3.0								1.5								7.5
130.40	12.8	25.5	3.2	3.2															44.7
130.45	3.5																		3.5
130.50	6.2																		6.2
Total	76.4	284.1	157.0	31.9	14.6	18.2	36.1	17.6	5.3	0	7.6	4.5	2.8	1.9	0	0	0	0	658.0

Table III (cont'd)
Record of Sardine Larvae, 1953

Station	Midpoint of Size Class (in mm.)																	
	3.00	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5304:																			
107.40	3.1																		3.1
107.45	15.2																		15.2
107.60												2.8	2.8						5.6
107.80							2.8												2.8
110.55	3.0	6.0	15.0					3.0											27.0
110.60	13.3	20.0	3.3																36.6
110.70															3.2				3.2
113.35	22.1	6.0																2.0	30.1
113.40	3.2										3.2								6.4
113.45	23.4							2.9			2.9	2.9							32.1
113.50										3.0									3.0
113.55										2.9		2.9		2.9					8.7
113.70						2.8			2.8										5.6
117.26	4.9	6.5	3.3																14.7
117.50	44.3	3.2																	47.5
117.55	17.0	25.5	14.2																56.7
117.60	18.1	38.9																	57.0
120.25	109.5	5.8																	115.3
120.35						3.2	3.2												6.4
120.40	4.3																		4.3
120.50	95.9	2.8																	98.7
120.60		5.4																	5.4
127.50	2.3	11.3																	13.6
130.50	2.7	13.7																	16.4
133.60			3.1	3.1															6.2
Total	382.3	145.1	38.9	3.1	0	6.0	6.0	5.9	2.8	5.9	6.1	8.6	2.8	2.9	3.2	0	0	2.0	621.6

Table III (cont'd)
Record of Sardine Larvae, 1953

Station	Midpoint of Size Class (in mm.) 3.00	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5305:																			
103.35			2.9																2.9
110.50	255.8	75.1	8.4	5.6															344.9
110.55		3.0																	3.0
113.45	131.1	238.4	50.7	38.8	23.9	9.0	14.9	6.0	3.0		3.0	3.0	3.0						524.3
113.50		4.7																	4.7
117.40		2.6																	2.6
117.45		17.4	11.6	5.8		11.6													46.4
117.50	98.9	247.6	60.5	30.2	19.3	2.8													459.3
117.55	10.4	10.5																	20.9
117.60	7.2																		7.2
120.35								6.5											6.5
120.40	28.3	8.1																	36.4
120.45	33.1	16.6																	49.7
120.50	432.2	408.5	153.9	76.9	5.9	11.8	5.9	5.9	17.7	5.9									1124.6
120.60		2.8																	2.8
120.90									2.7				2.7						5.4
123.40	4.6																		4.6
123.45	16.6		19.1	19.0	2.4	2.4	2.4	2.4											64.3
123.50	73.0	313.1	133.8	21.3	15.2	9.1													565.5
123.55			5.7	8.5	5.6		5.7	2.8	5.7	2.8									36.8
123.60				2.3		4.6													6.9
127.40													5.2	5.2			5.2		15.6
127.45	249.4	405.1	24.7																679.2
130.40		39.6	2.6																42.2
130.45	3.4	20.3	3.4	16.9															44.0
130.50	5.3	26.4	31.7																63.4
130.55		3.1							3.1										6.2
133.40		14.6	2.4						2.4										19.4
133.45					2.1					6.2	2.1								10.4
133.50	5.4		5.4	29.6	8.1		2.7					2.7							53.9
133.55									7.9	19.7	4.0	11.8	5.9						49.3
133.60											2.8								2.8
Total	1354.7	1857.5	516.8	254.9	82.5	51.3	31.6	23.6	42.5	34.6	11.9	17.5	16.8	5.2	0	0	5.2	0	4306.6

Table III (cont'd)
Record of Sardine Larvae, 1953

Station	Midpoint of Size Class (in mm.)																		
	3.00	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5306:																			
93.27	5.6																		5.6
110.65	2.8	2.8																	5.6
113.40		2.6																	2.6
113.45		2.6																	2.6
113.50	3.0																		3.0
113.55	16.8	2.8																	19.6
113.60	113.8	398.1	104.2	38.0	4.7	4.7													663.5
117.55	289.8	1239.7	25.8	19.3	35.5	9.7													1619.8
117.60	2.9	72.2	14.5																89.6
117.65	2.0	2.0																	4.0
120.35		4.9			2.5														7.4
120.45				3.1	6.3														9.4
120.50	34.1	267.3	65.6	24.3	4.8	12.2	9.7		2.4	2.4									422.8
120.70	1.6																		1.6
123.40	2.6			2.6		2.6													7.8
123.50							6.0							3.0					9.0
123.55		34.7	49.1				2.9		2.9										89.6
127.34													3.0						3.0
127.50				4.6															4.6
130.50							5.6						2.8						8.4
130.55	12.3	19.7	2.5									2.5	2.5		5.0				44.5
133.40															3.7				3.7
137.30		6.2							9.3										15.5
137.35			2.5	7.4	12.3	2.5				2.5									27.2
137.50												2.4							2.4
Total	487.3	2055.6	264.2	99.3	66.1	31.7	24.2	0	14.6	4.9	0	4.9	8.3	3.0	8.7	0	0	0	3072.8

Table III (cont'd)
Record of Sardine Larvae, 1953

Station	Midpoint of Size Class (in mm.)																	
	3.00	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5307:																			
93.27	2.1	4.2																	6.3
120.35		7.6				7.6													15.2
123.40	18.0																		18.0
123.45			3.6																3.6
127.34							3.3												3.3
130.35						2.8													2.8
137.23	60.8	14.1	4.7				4.7												84.3
Total	80.9	25.9	8.3	0	0	10.4	8.0	0	0	0	0	0	0	0	0	0	0	0	133.5
Cruise 5308:																			
117.26	17.4																		17.4
120.25	31.0																		31.0
120.45			3.8	7.6	15.2		3.8												30.4
120.50				7.0		7.0													14.0
120.60			3.3	3.3	9.8				3.3					3.3					23.0
123.37						2.2													2.2
123.45	26.7																		26.7
123.50		3.1																	3.1
127.40		2.9				2.9			2.9										8.7
130.30													10.6	10.6		3.5			24.7
130.35	32.1		3.6																35.7
133.30	2.2	2.2	2.2	4.4		2.2													13.2
133.35	31.5																		31.5
137.23	2.5	5.0	9.9	19.8	9.9	32.2	7.5	7.5	5.0										99.3
137.30						10.8	8.1	5.4	5.4					2.7		2.7			35.1
Total	143.4	13.2	22.8	42.1	34.9	57.3	19.4	12.9	16.6	0	0	0	10.6	16.6	0	6.2	0	0	396.0

Table III (cont'd)
Record of Sardine Larvae, 1953

Station	Midpoint of Size Class (in mm.)																	
	3.00	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5309:																			
117.26							1.2												1.2
117.30	5.4																		5.4
117.40		14.7	20.6	11.8	8.8														55.9
118[5]25	9.3																		9.3
119.42			2.0		4.0	2.0	2.0		2.0										12.0
120.25	54.8	20.8	4.8	6.1															86.5
120.30	201.3	142.1	106.6	35.6	8.9	3.0			3.0										500.5
120.30E	101.5	16.2	8.1	4.1		2.0													131.9
120.31	306.5	16.4																	322.9
120.35	58.3	21.3	1.9																81.5
121.30	8.6	4.3	5.8	8.7	1.4	1.4													30.2
121.34	7.2	27.4	10.1	1.4	2.9														49.0
121.41			2.7	2.7															5.4
121[1]26	20.4	3.6																	24.0
121[5]28			1.1																1.1
Total	773.3	266.8	163.7	70.4	26.0	8.4	3.2	0	5.0	0	0	0	0	0	0	0	0	0	1316.8
Cruise 5310:																			
107.35									3.5										3.5
113.30	2.7		2.7																5.4
117.26			2.9																2.9
120.25	11.7	2.9																	14.6
120.30	110.7	72.9	51.3	10.8	2.7	8.1		2.7											259.2
120.35	17.0	17.0	6.8	6.8	3.4	3.4	3.4												57.8
123.37	64.6	5.0								2.5									72.1
123.40							6.4	6.4	6.5	16.2	6.4			3.2					45.1
127.34	2.3																		2.3
127.40			2.2									2.2							4.4
130.35										7.1									7.1
130.40								4.1	4.1	8.2	12.3	16.4	16.4	12.3	4.1				77.9
133.40														10.8					10.8
Total	209.0	97.8	65.9	17.6	6.1	11.5	9.8	13.2	14.1	34.0	18.7	18.6	16.4	26.3	4.1	0	0	0	563.1

Table III (cont'd)
Record of Sardine Larvae, 1953

Station	Midpoint of Size Class (in mm.)																		
	3.00	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5312:																			
120.35	14.7																		14.7
120.45														8.0					8.0
121331	2.0																		2.0
123.37						8.9	20.8	11.8	20.7	8.9		3.0							74.1
123.40			3.1		3.1	6.2	3.1	18.6	6.2	3.1	6.2	3.1	3.1		3.1				58.9
127.50														2.7					2.7
130.30						2.0													2.0
130.35			4.7																4.7
133.25			3.6	1.8	1.8		1.8			1.8									10.8
133.30				1.8															1.8
Total	16.7	0	11.4	3.6	4.9	17.1	25.7	30.4	26.9	13.8	6.2	6.1	3.1	10.7	3.1	0	0	0	179.7

Table IV
Record of Anchovy Larvae, 1953

Station	Midpoint of Size Class (in mm.) 2.5	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5301:																				
80.51	11.8	13.8	7.9	11.8	2.0		5.9													53.2
83.43	4.3	4.3																		8.6
83.48										2.8		1.4								4.2
83.51			2.8		2.8	2.8			5.5	8.3	5.5									27.7
83.55					5.6															5.6
83.60										3.0										3.0
85.38	9.8	24.5	9.8																	44.1
85.40			2.9		2.9															5.8
85.50									3.1											3.1
87.35	221.2	19.1																		240.3
87.40								5.5												5.5
90.28	24.6	2.0					2.0													28.6
90.53	3.2																			3.2
90.80	3.7																			3.7
93.27				4.5																4.5
93.30		2.8	13.9	16.7	22.2		2.8													58.4
97.30	9.7	4.9	14.6	6.4	14.6	11.4	4.9	3.2			1.6									71.3
97.32												3.4								3.4
97.40								6.1		9.1										15.2
100.29	13.2	10.5	2.6	10.5	7.9	7.9		5.2	2.6											60.4
100.30	92.4	68.5	29.8	3.0	6.0	6.0														205.7
100.50					3.2		3.2	12.6	3.2											22.2
100.60								2.9												2.9
105.32	2.1	14.9	21.2	14.8	4.2	6.3	2.1	4.2											2.1	71.9
105.50						6.7		3.4												10.1
110.60			3.1	3.1	3.1															9.3
110.70						2.1														2.1
117.40		12.5	25.2	3.1	40.8	53.4	44.0	15.7	6.2											200.9
117.50	2.8			2.8		5.6	2.8	5.5												19.5
120.30			2.8	2.8																5.6
120.35	2.3	2.3	4.6	4.6			9.0	13.6	2.3		2.3		2.3							43.3
120.45	1006.1	2521.6	5194.2	919.0	563.2	297.0	238.1	30.7												10769.9
120.50		2.6	5.3	2.6	2.6	5.3		2.6	2.6										2.6	26.2
123.37	49.4	20.2	2.2	4.5																76.3
127.34		4.5	40.7	22.7	3.0	1.5	3.0													75.4
130.35				8.9	13.4	17.9	4.5	4.5		2.2										51.4
133.25					2.1	2.1		2.1												6.3
133.30		2.3	4.6	2.3				2.3	9.2	2.3										23.0
133.40									2.2			2.2								4.4
137.23	407.6	83.6	29.3	16.7	2.1															539.3
137.30				2.2		2.2														4.4
Total	1864.2	2814.9	5417.5	1063.0	701.7	428.2	322.3	120.1	36.9	27.7	9.4	7.0	2.3						4.7	12819.9

Table IV (cont'd)
Record of Anchovy Larvae, 1953

Station	Midpoint of Size Class (in mm.)																		
	2.5	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5302:																				
80.51	10.2	1.7	1.7	3.4	1.7	5.1	1.7													25.5
80.55									2.5		2.5									5.0
80.60							5.8		5.8											11.6
80.70				2.2																2.2
83.43	44.0	5.2	5.2	5.2	2.6	2.6			2.6		2.6									70.0
83.48	3.6				1.8		3.6	3.6	1.8											14.4
83.51			2.0				2.0													4.0
85.39	51.2	204.8	92.8	64.0	131.2	156.8	118.4	76.8	6.4	6.4										908.8
85.40	11.4	200.8	333.5	106.1	68.2	102.3	109.9	121.3	26.5	7.6										1087.6
85.45			10.9		21.8			10.9												43.6
85.50		7.9	23.7	7.9	15.8	15.8		15.8	15.8	23.7										126.4
85.55			3.9		3.9															7.8
85.60															4.0					4.0
87.35	84.6	37.6	18.8	84.6	84.6	37.6			9.4											357.2
87.40			11.8	23.7		23.7					11.8									71.0
87.45			2.9	2.9			2.9		5.7	2.9										17.3
87.50		1.0	3.0	1.0	6.0	1.0	1.0		3.0	1.0		1.0								18.0
90.28	9.8	14.7	9.8	4.9	4.9	4.9		4.9												53.9
90.30		11.2					11.2													22.4
90.80								3.3												3.3
93.27				6.7	6.7															13.4
93.30						12.3	12.3													24.6
93.40		24.0				12.0				12.0										48.0
97.30	158.6	197.8	41.2	12.4	6.2	4.1	2.1	2.1												424.5
97.32	19.9	25.7	11.4	37.1	11.4	8.5	8.5	31.4	17.1	5.7			2.8							179.5
97.40		6.0	11.9	14.8	65.4	56.5	38.6	29.7	17.8	5.9		3.0		3.0						252.6
97.50						2.4	2.4	4.8	2.4	2.4	7.2	2.4								24.0
97.60										9.6										9.6
100.29	19.8	11.3	22.5	104.4	160.7	84.6	50.8	64.8	22.6	8.4										549.9
100.30			2.2	2.2	8.8	4.4	8.8	6.6	15.4	4.4	6.6	4.4								63.8
100.40	3.2	28.9	29.0	3.2	3.2	6.4	6.4	16.1		12.9	6.4		3.2							118.9
100.50								4.8	7.3		2.4									14.5
100.60										3.3										3.3
105.32	24.0	19.2	28.8	21.6	2.4	7.2	2.4													105.6
105.35	34.9	23.3	5.8																	64.0
105.40								3.2												3.2
110.33	224.9	177.6	29.6	29.6	5.9			3.0												470.6
110.35	20.6	12.9	7.8	5.2	5.2	2.6														54.3

Table IV (cont'd)
Record of Anchovy Larvae, 1953

Station	Midpoint of Size Class (in mm.)																		
	2.5	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5302 (cont'd):																				
110.60				3.0	21.2	12.1														36.3
113.30	9.0	110.3	69.7	78.8	141.7	105.8	90.0	33.8	18.0	6.7	9.0	2.2	4.4					2.2		681.6
113.35		101.4	96.1	88.1	331.1	258.9	194.9	72.0	80.1	24.0	24.0	8.0	8.0							1286.6
113.40	123.0	58.6	41.0	123.0	298.8	398.4	272.4	213.9	82.0	90.8	26.4	17.6	2.9	5.8	2.9	2.9	2.9			1763.3
113.50	9.9																			9.9
113.60	10.2	181.8	99.9	53.7	51.2	10.2	20.5	2.6												430.1
117.26				9.5	11.9	21.4	9.6	14.3	7.2	2.4	7.2	2.4		2.4	2.4					90.7
117.30				5.3	10.6	13.2														29.1
117.35	93.0	9.0	33.0	108.0	48.0	21.0	3.0	3.0	3.0											321.0
117.40			2.9	11.8		2.9													5.9	23.5
117.50		31.8	21.2		10.6															63.6
117.60			3.2																	3.2
120.25	446.6	219.2		16.2																682.0
120.30		12.0	50.4	84.0	69.6	43.2	26.4	24.0	21.6	2.4	12.0	14.4	7.2		4.8	2.4				374.4
120.35				2.7	10.7	5.4	5.4	8.1	10.7	8.1					2.7	2.7				56.5
120.45				2.8	27.9	36.3	27.9	33.5	14.0	11.2	5.6								5.6	164.8
120.50			2.9	52.0	31.8	2.9	11.6	2.9												104.1
120.60			5.4	13.5																18.9
120.70				14.7	26.6	61.9	32.5	17.7	5.9											159.3
120.80					9.4		9.4	6.2												25.0
123.37	2.2	2.2	6.5	67.2	143.2	169.3	225.7	178.0	67.3	34.7	10.8	6.5	2.2			2.2				918.0
123.40				5.5	8.2		2.7	10.9												27.3
123.45	6.0	135.9	57.4	9.0	6.0															214.3
123.50							3.0													3.0
127.34			21.8	21.8	10.9	8.7	4.4		4.4											72.0
127.40			8.4	2.8	14.0	16.8	36.6	16.8	42.2	30.9	5.6	25.3	2.8		2.8					205.0
127.45		2.7	2.7	2.7	8.2	8.2	19.1	5.5	2.7			2.7	2.7	2.7						59.9
130.30		41.0	163.8	226.6	87.4	19.1	24.6	2.7	5.5	5.5	2.7	5.5	2.7	2.7						589.8
130.35	392.2	5.3	5.3	15.9	5.3		5.3													429.3
130.40		5.0	10.1	5.0	5.0															25.1
130.45				2.8																2.8
130.50					2.8															2.8
133.25	122.5	75.2	79.5	17.2	2.2		2.2													298.8
133.30	104.8	62.9	2.6	2.6	2.6															175.5
137.23			123.7	375.7	380.2	212.2	203.3	168.0	57.5	35.4	4.4	13.2								1573.6
Total	2040.1	2065.9	1617.7	1965.0	2395.5	1978.7	1619.3	1217.0	584.2	358.3	147.2	108.6	38.9	16.6	19.6	10.2	2.9	2.2	11.5	16199.4

Table IV (cont'd)
Record of Anchovy Larvae, 1953

Station	Midpoint of Size Class (in mm.)																		
	2.5	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5303:																				
80.51				5.0		5.0	5.0		14.9	5.0										34.9
80.55								5.5						5.5						11.0
80.60							9.3	13.9		9.3										32.5
83.43		53.3	23.6	47.3	41.4	41.4	11.8	17.7	5.9	17.7	5.9									266.0
83.48		2.9																		2.9
83.51								3.3	6.6											9.9
83.55								6.5	13.0											19.5
83.60						3.7		11.1	3.7	7.4	14.8	3.7	3.7	3.7	3.7	3.7				59.2
85.39	32.9	11.0	8.8	13.2	4.4	13.2	11.0	2.2												96.7
85.40	6.6	16.4	16.4	3.3	6.6			3.3		3.3										55.9
85.45			6.6			6.6														13.2
85.50												2.9								2.9
85.60								24.3	6.1	6.1							6.1	6.1		48.7
87.35	47.1	73.5	26.5	26.5	17.7	17.6	11.8	8.8	8.8		2.9	2.9			2.9					247.0
87.40	3.5	3.5	6.9	3.5	3.5	3.5		3.5												27.9
87.45											3.0	3.0	3.0	3.0	9.0		3.0			24.0
87.50											2.0									2.0
90.28	35.7	32.7	32.6	86.2	77.3	77.3	95.0	109.9	38.6	17.8										603.1
90.30	64.0	78.5	20.4	46.6	99.0	52.4	55.3	43.6	49.5	26.2	23.3	11.6	5.8							576.2
90.37			3.0		3.0	8.9	38.3	50.2	26.6	5.9	3.0	3.0		3.0						144.9
90.45						10.2	17.0	33.9	27.2	30.5	37.3	13.6		3.4						173.1
90.50									6.4											6.4
93.30	6.0		8.9	35.6	41.5	32.7	11.8	53.5	8.9	5.9	3.0	3.0		5.9	3.0					219.7
93.50								3.2	9.6	3.2										16.0
97.30	8.7	5.8	11.6	23.2	34.8	43.5	34.8	29.0	37.7	8.7										237.8
97.35		8.7	46.7	8.8	5.8															70.0
97.40	3.1	28.1	15.6	3.1	3.1															53.0
100.29	5.1			20.3	35.5	45.7	35.6	55.8	55.9	40.6	15.2		5.1		5.1	5.1				325.0
100.30	5.6	19.5	2.8	11.2	11.1	13.9	25.0	16.7	16.7	5.6					2.8				2.8	133.7
105.32	9.0		3.0		6.0	12.0	12.0	15.0	21.0	6.0	3.0			3.0						90.0
105.35								2.1												2.1
110.33	12.5	8.2	12.4	29.0	10.3	2.1		4.2	6.2	6.2										91.1
110.35	40.4	86.4	17.3	17.3	23.1	5.8														190.3
110.40	8.4	58.8	47.6	28.0	50.4	39.2	22.4	14.0	16.8	5.6	2.8									294.0
110.60														2.6	2.6					5.2
113.30						9.5	5.7	1.9	1.9		1.9					1.9	1.9	5.7*		30.4
113.35		2.7	48.8	67.8	113.8	100.2	103.0	43.4	32.6	10.8	2.7	5.4		2.7						533.9
113.40		4.8	115.7	195.2	98.8	33.8	19.2	14.5	7.2											489.2
113.45		2.5	5.0	22.7	32.7	12.6	2.5		2.5	2.5										83.0
113.50					2.3		2.3													4.6

Table IV (cont'd)
Record of Anchovy Larvae, 1953

Station	Midpoint of Size Class (in mm.) 2.5	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5303 (cont'd):																				
117.26	54.8	13.2	1.9		3.8	3.8	7.6	7.6	1.9					3.8						98.4
117.30				2.0	4.0		2.0	2.0	2.0	2.0										14.0
117.35				2.9						2.9										5.8
117.40				2.8	5.6	5.6	8.4	5.6												28.0
117.45				2.7	2.7	16.2	5.4	13.5	2.7	5.4										48.6
117.50						9.4	62.8	31.4	15.7		3.1	6.3								128.7
117.55						6.0	21.0	48.0	6.0	6.0	6.0	3.0	3.0							99.0
117.60					3.0	3.0	26.6	6.0	11.9											50.5
120.25				24.1	35.0	8.8	6.6	13.2	8.8	4.4	2.2	2.2								105.3
120.30				5.4			5.3	10.7											2.7	24.1
120.35				2.7									2.7							5.4
120.40	12.4	2.1	28.8	22.7	6.2	2.1	4.1			2.1	6.2								12.4	99.1
120.45	2.8	2.8	17.0	11.4		2.8	8.5	17.1	22.7	19.9	8.5	8.5	2.8		5.6			2.8		133.2
120.50	15.4	5.1	7.7	2.6	7.7			15.2	7.6	12.7	2.6									76.6
120.55									2.9											2.9
123.37		2.6	7.7	5.1		2.6	10.3	10.3	5.2	2.6	5.1	2.6								54.1
123.40		2.7	21.9	43.9								5.5								74.0
123.45	149.3	110.0	13.1	57.6	55.0	13.1	10.5													408.6
123.50		6.0	3.0	3.0	21.0		3.0													36.0
123.60				2.8	8.5	8.5	2.8	2.8												25.4
127.34		29.0	232.0	278.4	394.4	243.6	92.8	116.0	58.0	46.4	11.6	17.4			5.8					1525.4
127.40	217.6	2904.9	369.9	10.9	43.6	10.9														3557.8
127.45	297.5	111.9	40.9	51.9	5.5	5.4	5.4	2.7	2.7											523.9
130.30			12.1	79.5	148.8	205.9	77.9	29.4	24.2	20.7	22.5	24.2	27.7	17.3	20.7	10.4				721.3
130.35		20.1	54.4	105.8	25.8	25.7	31.5	14.3	8.6	2.9										289.1
130.40	48.2	348.4	120.6	18.7	8.1		2.7	5.4												552.1
130.50			2.3																	2.8
133.25			2.6	4.0	10.7	5.3	4.0	1.3	5.4	6.7	1.3	1.3	1.3	4.0	1.3					49.2
133.30				5.0	7.5		5.0													17.5
133.45				2.8																2.8
137.23		5.1	119.8	285.6	306.0	252.4	53.6	2.6	20.4	2.6	2.6									1050.7
137.30		160.2	202.9	149.5	48.1	13.3	10.6	8.0	16.0	16.0	24.1	21.4	16.0	5.4	2.7				2.7	696.9
137.35					5.0															5.0
137.40									2.3											2.3
Total	1086.6	4221.4	1739.3	1877.6	1878.1	1435.2	997.2	954.1	649.3	377.6	216.6	141.5	71.1	63.3	65.2	21.1	11.0	8.9	20.6 5.7*	15841.4

* - 1.9 - 25.25 mm. group; 3.8 - 27.25 mm. group

Table IV (cont'd)
Record of Anchovy Larvae, 1953

Station	Midpoint of Size Class (in mm.)																		
	2.5	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5303 (Late March):																				
113.30			1.6	1.6		3.2														6.4
113.35			8.6			2.9														11.5
113.40						2.4	4.9													7.3
113.45			3.5		21.2		7.1		3.5		7.1									42.4
113.50		5.0	12.6	17.5	17.5	10.0	2.5	12.5	10.0	7.5						5.0	2.5			102.6
117.26		9.2	18.4	57.5	105.8	27.6	4.6	9.2	11.5	6.9			2.3							253.0
117.30	7.6	47.7	82.1	166.1	36.3	5.7	9.5	13.3	1.9											370.2
117.35			1.9				1.9		1.9		1.9									7.6
117.40	20.9	41.9	35.9	29.9	18.0	15.0	15.0	6.0		3.0										185.6
117.45		28.2	2.6	7.7	2.6	7.7	2.6	2.6		5.1										59.1
117.50	17.0	13.6					3.4	3.4												37.4
117.55		20.4	11.7	11.7		2.9		2.9												49.6
120.25	469.0	488.5						10.6	31.8	14.2	8.8									1022.9
120.30					1.6	6.2	23.6	69.1	23.5	25.1	9.4	9.4	3.1	3.2		3.2				177.4
120.40		2.8							2.8	5.6		2.8								14.0
120.45		3.2																		3.2
120.50						2.5							2.5	2.5						7.5
120.55			2.6					2.6		2.6										7.8
120.90			6.6																3.3	9.9
123.37			1.9			1.9	1.9	5.6	11.1	5.6									1.9	29.9
123.40		3.4								6.9										10.3
123.50	141.1		20.2	2.9	2.9	2.9			2.9											172.9
123.55	304.3	111.9	43.1	20.1			2.9	2.9												485.2
123.60	10.9	43.5	95.2	76.1	29.9	5.4	2.7													263.7
127.34	4.5	31.3	16.4	6.0		11.9	7.5	9.0	46.2	67.1	20.9	6.0	1.5		1.5		1.5			231.3
127.40								7.5	11.2	7.4	7.4		3.7	3.7	3.7	7.4	7.5	11.1*		70.6
127.45												2.8								2.8
127.50	39.1	12.0																		51.1
127.55	3.1	9.3	6.2																	18.6
130.30		2.8				1.4	1.4	2.7	1.4											9.7
130.35				6.2					3.1											9.3
130.40	3.2	19.2	3.2	6.4	3.2															35.2
130.45		7.0				3.5			3.5											14.0
130.50		3.1			12.5	15.7	6.2	31.3	28.2	15.7	9.4	3.1			3.1					128.3
130.55		3.3	3.3		9.9						6.6									23.1
133.25			1.5	14.8	23.7	44.4	56.2	44.4	37.0	13.3	3.0	3.0								241.3
133.30			3.6	8.7	28.0	82.3	80.6	29.7	5.2	1.8										239.9
133.35	4.9	12.2	36.5	92.4	114.2	58.4	94.7	60.7	19.4	12.1	2.4			2.4						510.3
137.23			1.9	3.8	1.9		5.7	13.3	19.1	17.2	1.9	13.3	9.5	5.7	1.9					95.2
137.30							2.3	11.7	4.6	2.3										20.9
Total	1025.6	919.5	421.1	529.4	429.2	313.9	337.2	351.0	279.8	219.4	78.8	40.4	22.6	17.5	10.2	15.6	11.5	0	11.1*5.2	5039.0

* - 3.7 - 30 mm.; 3.7 - 31 mm.; 3.7 - 34 mm.

Table IV (cont'd)
Record of Anchovy Larvae, 1953

Station	Midpoint of Size Class (in mm.)																		
	2.5	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5304:																				
80.51												2.9								2.9
83.40E	21.2	1.1																		22.3
83.43		6.2	12.5	6.2																24.9
83.43E					9.6		4.8													14.4
83.48	2.2		2.2																	4.4
83.48E					7.6															7.6
83.60															12.0					12.0
85.39	10.4	2.6					2.6	7.8	5.2				2.6		2.6					33.8
85.39E	7.0			7.0		7.0														21.0
85.40	8.3	5.6		2.8				2.8		5.5	5.5	2.8	8.3							41.6
85.40E		14.5	14.4	7.2	14.5		14.4													65.0
85.45		2.6	2.6	2.6					5.1	5.2	7.7	7.6	10.2	2.6	7.8			2.6*		56.6
85.45E				24.1	36.1	42.2	30.1	24.0												156.5
85.50						2.4				4.8		4.8			2.4					14.4
85.50E		2.6		2.6																5.2
87.35	2.9																			2.9
87.35E	6.6	13.1	32.8	118.1	118.1	78.7	26.2	6.6				6.6								406.8
87.40									3.0											3.0
87.45																		2.3*		2.3
90.28	6.4	48.2	25.6	28.9	6.4		3.2			3.2		3.2								125.1
90.30			7.5	12.5	12.5	5.0		2.5	5.0	2.5	2.5				2.5		2.5	2.5*		57.5
90.37						1.8														1.8
90.55																5.5				5.5
93.27	186.0	68.2	117.8	37.2	24.8	12.4								6.2						452.6
93.30	22.3	27.9	33.5	22.4		16.7	11.2	11.2	16.7	16.8										178.7
93.35					3.0			9.0												12.0
93.40								2.9												2.9
93.45							6.3	6.3		12.6	6.3	6.3			12.6					50.4
97.30			2.8	25.5	17.0	17.0	8.5	5.7	17.0	14.2	8.5	8.5			2.8					127.5
97.60								3.2												3.2
100.29	11.2	30.9	19.6	25.3	5.6	11.2	2.8	5.6		5.6	8.4	8.4	14.0	2.8	19.6	5.6	2.8			179.4
100.30	56.3	75.1	100.2	81.4	12.6	18.8		6.3		12.6		6.3	6.3	6.3				6.3*	12.5	401.0
100.35										3.1										3.1
103.30		5.8	8.8	11.8	2.9	2.9						2.9	2.9		2.9					40.9
103.35										2.8	2.8									5.6
107.32		37.0	21.6	18.5	3.1				3.1											83.3
107.35	97.5	75.9		2.7					2.7		2.7									181.5
110.33								5.9		5.9			5.9			5.9				23.6
110.35							4.8				24.1	24.1			4.8	4.8	9.6	4.8*		77.0
110.40			20.9	25.0	54.3	58.5	46.0	33.4	29.3	8.4	12.6	8.4		8.4	4.2	4.2				313.6
113.35		2.0																		2.0
113.40					3.2								6.4							9.6
113.45						8.8	2.9													11.7

Table IV (cont'd)
Record of Anchovy Larvae, 1953

Station	Midpoint of Size Class (in mm.)																		
	2.5	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5304 (cont'd):																				
117.26	39.1	68.4	110.8	48.9	35.9	22.9	1.6	3.3												330.9
117.40			2.9	2.9	2.9		8.7	2.9												20.3
117.45	5.8	31.9	11.6	5.8	17.4	5.8	2.9													81.2
117.50	3.2			3.2	3.2	3.2		3.2	3.2		3.2	3.2								25.6
117.55					2.8	5.7	11.4	19.9		2.8			2.8							45.4
117.60							5.2	5.2	5.2			7.8	5.2							28.6
117.70									2.9											2.9
120.25	57.6	57.6	51.9	28.8	11.5					2.9										210.3
120.30	61.7	85.7	112.6	50.9	16.1	61.6	16.1	13.4	5.4	2.7	8.1	2.7	5.4	5.4						447.8
120.35	28.8	96.0	35.2	3.2	9.6	3.2	3.2		6.4	3.2	3.2	3.2	3.2							198.4
120.40										2.9	1.4	1.4	7.2		2.8					15.7
120.45			2.7			2.7		2.7		2.7										10.8
120.50			17.0	28.2	11.2	14.1		16.9	2.8	2.8	2.8	2.8	2.8	5.6	2.8					109.8
120.55		5.7	20.0	14.3	31.4	8.6														80.0
120.60			5.4	13.5	5.4	2.7	2.7													29.7
123.40			6.0	3.0	3.0	3.0	3.0								3.0		3.0	3.0		27.0
123.45		2.5		10.0	70.0	72.5	60.0	27.5	30.0	12.5	17.5	2.5	7.5	10.0				2.5*		325.0
123.50				2.8	11.4	8.5	14.2		5.7	8.5										51.1
123.55	190.1	50.4	20.6	13.7	6.9														4.6	286.3
123.60		2.8		2.8																5.6
127.40		3.2			6.4	6.4														16.0
127.45	11.1	13.9	2.8	11.1		5.6				2.8										47.3
127.50	24.9	101.7	33.9	31.7	36.2	22.6	4.5													255.5
127.55					2.4			2.4					2.4							7.2
127.60	5.5	16.5	8.3	2.8	5.6	5.5	5.6	8.3	2.8											60.9
130.30		2.8			2.8	2.8	8.4	2.8		2.8										22.4
130.35			2.6																	2.6
130.40								2.7												2.7
130.45	63.6	201.4	10.6																	275.6
130.50	60.0	57.3	114.6	51.9	8.2															292.0
130.55			2.2		2.2															4.4
130.60		2.6				2.6														5.2
133.25				1.9		5.7	5.7	3.8	1.9	3.8									1.9	24.7
133.30	3.2	3.2	3.2	3.2						3.2										16.0
133.35			3.2	3.2	3.2															9.6
133.40						3.2	3.2													6.4
133.55		12.2			3.0	3.0														18.2
133.60	3.1	33.7	9.2	9.2			3.1	3.1	9.2	21.4		6.2	6.2	15.3	6.2	3.1			3.1	132.1
137.23			2.7		2.7	10.6	19.9	8.0	10.7	8.0	2.7									65.3
137.30			6.0			6.0	3.0													15.0
137.35	2.9	11.8	20.5	17.7							2.9									55.8
137.40				5.6																5.6
Total	998.9	1280.6	1039.3	832.1	642.7	571.9	346.2	259.3	173.3	186.2	122.9	122.6	99.3	62.6	89.0	29.1	17.9	3.0	21.0* 22.1	6920.0

* - 16.2 - 25.25 mm.; 2.3 - 27.25 mm.; 2.5 - 29.25 mm.

Table IV (cont'd)
Record of Anchovy Larvae, 1953

Station	Midpoint of Size Class (in mm.)																		
	2.5	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5305:																				
83.40	119.4	55.7	2.0		4.0		2.0				2.0									185.1
83.43		9.8								9.8										19.6
83.48			5.6		5.6	5.6	33.3	5.6		27.8									5.6	89.1
83.48E											2.2									2.2
83.50							3.0	3.0			3.0									9.0
85.39					12.2	36.7	12.2	24.5												85.6
85.39E				2.5				2.5												5.0
85.40E						4.4														4.4
85.45						10.2	30.7	10.2	92.1	40.9	10.2	10.2								204.5
85.50E										10.6										10.6
87.35		1.4	1.4																	2.8
87.35E												3.2								3.2
87.40						6.1				6.1										12.2
87.45		3.8																		3.8
87.50				3.2	6.5	3.2		9.7	6.5	12.9	22.7	9.7	9.7						3.2	87.3
90.28	2.7	2.7	2.7				10.7	2.7	8.1	26.8	8.1	10.8	5.4			2.7				83.4
90.30						2.4	2.4		2.4											7.2
90.35				4.2	8.4	8.4	12.6	8.4	12.6		8.4	4.2								67.2
90.41					4.8	9.7	4.8	7.3	2.4											29.0
90.45								6.5		6.5										13.0
93.27	2.3								2.3											4.6
93.30									7.6											7.6
93.35					8.4	8.4				4.2		4.2			4.2					29.4
97.30			1.9						3.8					1.9	1.9					9.5
100.29	2.6	2.6			2.6	2.6		2.6												13.0
100.30					2.6		2.6	2.6												7.8
103.30	2.3	4.7					2.3		2.3											11.6
103.35	17.3	2.9	5.8	2.9		5.8	2.9													37.6
103.40		3.0	3.0																	6.0
107.35	20.8	57.2		2.6	7.8	13.0	5.2													106.6
110.35	3.4	20.4	3.4																	27.2
113.30				2.3				2.3	4.6											9.2
113.35					10.8	5.4		5.4	10.8	5.4	5.4									43.2
113.40	21.9	93.9	56.4	50.0	12.6		3.1	6.2												244.1
113.45		9.0	29.8	6.0	23.9	23.9	26.8	17.9	9.0	9.0	3.0	3.0	3.0	3.0	3.0					170.3
113.50	9.3	135.2	130.5	97.9	28.0	18.6	14.0	4.7												438.2
113.70															2.9					2.9

Table IV (cont'd)
Record of Anchovy Larvae, 1953

Station	Midpoint of Size Class (in mm.)																		
	2.5	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5305 (cont'd):																				
117.26	56.1	56.2	37.4				37.4	18.7	18.7											224.5
117.30																		4.4		4.4
117.35		2.4	4.8	35.6	49.8	56.9	61.7	64.0	35.6	4.7		2.4								317.9
117.40		2.6					10.6			2.6	2.6									18.4
117.45				11.6																11.6
120.25	30.1	52.7	5.6	7.5						1.9										97.8
120.30			5.4		5.4															10.8
120.45		11.0	38.7	5.5	5.5	11.0			11.0				5.5							88.2
120.50					11.8	5.9	5.9	11.8		11.8										47.2
120.80													2.4							2.4
123.40		4.6																		4.6
123.45						2.4														2.4
123.55									5.6				2.8							8.4
123.60				2.3					2.3											4.6
127.34	5.2	7.8	18.2	7.8	2.6	2.6	2.6	18.2	10.4	2.6		2.6								80.6
127.40			5.2	10.4	10.4	5.2		5.2		15.6	5.2	5.2	5.2		10.4		5.2	5.2	15.6*	104.0
127.45	4.9	19.8	24.7																	49.4
127.50	2.1	2.1																		4.2
127.55	13.5																			13.5
130.35		4.8																		4.8
130.40	2.6																			2.6
130.45				3.4																3.4
130.50		5.3		2.6																7.9
130.55	3.1	3.1	18.7	12.4																37.3
130.60		2.6	2.6	2.6					2.6											10.4
133.25							4.6			9.2										13.8
133.35					2.8	2.8														5.6
133.40	4.8	9.7		2.4					2.4											19.3
133.45		4.1						2.1		2.1										8.3
133.50	5.4	94.1	53.8	2.7		2.7														158.7
133.55			2.0	3.9	7.8	3.9	2.0		4.0	3.9										27.5
137.30		2.4						2.4												4.8
137.60							3.2													3.2
Total	329.8	687.6	459.6	282.3	234.3	257.8	296.6	244.5	257.1	214.4	72.8	55.5	34.0	4.9	22.4	2.7	5.2	9.6	8.8 15.6*	3495.5

* - 15.6 - 25.25 mm.

Table IV (cont'd)
Record of Anchovy Larvae, 1953

Station	Midpoint of Size Class (in mm.)																		
	2.5	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5306:																				
83.40																2.3	2.3			4.6
85.39E		34.7																		34.7
85.39								12.4			12.4									24.8
85.40							11.5													11.5
87.35E	21.9		43.8																	65.7
90.28							9.3				9.3									18.6
90.30				10.0	10.0	10.0	10.0													40.0
90.55									6.3											6.3
93.27	22.2	83.4	33.4			5.6	11.2	5.6	11.1	11.2		5.6								139.3
93.30		5.3			15.9	5.3	10.6	5.3	5.3											47.7
93.35	3.3	36.3	23.1	3.3	6.6	19.8	3.3													95.7
97.30				2.4	2.4	2.4	2.4	7.1	2.4	9.5	2.4						2.4			33.4
100.30								3.1												3.1
100.35				4.1				8.2		4.1										16.4
103.30															3.3					3.3
107.35							2.8													2.8
107.40									9.4											9.4
107.45												4.7								4.7
110.35		16.6								5.5										22.1
110.55						2.9														2.9
110.60				2.5									2.5							5.0
110.65								2.8					5.7		2.8					11.3
113.30		7.0		17.5	7.0	14.0	7.0		17.5	17.5	3.5	3.5			7.0					101.5
113.35															5.1					5.1
117.26	39.2	91.7	128.4	125.7	78.6	23.6	36.7	13.1	18.3	2.6										557.9
117.30	2.4	9.7	22.0	24.4	2.4	4.8	4.9	4.9												75.5
117.35							5.4													5.4
117.40		2.6		2.6																5.2
117.50			2.8		5.6	5.6	5.6	2.8	2.8											25.2
117.55		3.2	3.2			3.2														9.6

Table IV (cont'd)
Record of Anchovy Larvae, 1953

Station	Midpoint of Size Class (in mm.)																		
	2.5	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5306 (cont'd):																				
120.25	380.4	329.5	106.7	111.3	9.2	4.6														941.7
120.30	27.2		5.4		10.9	38.0		16.3												97.8
120.35		2.5	7.4	5.0	7.4	17.3	22.3	9.9	12.4		2.5									94.1
120.40			1.8		1.8	1.8	1.8	1.8	1.8											10.8
120.45				9.5	47.4	50.6	15.8	6.3	9.5	3.2										142.3
120.50				4.8																4.8
120.70		14.3	3.2																	17.5
120.90		1.8	3.7																	5.5
123.37										2.4										2.4
123.40	2.6	2.6				2.6	2.6													10.4
123.45	3.0																			3.0
127.34							3.0													3.0
127.40						2.4	2.4	2.4	2.4			2.4				2.4				14.4
127.50									4.6											4.6
127.55	5.8	2.9																		8.7
130.30								6.0												6.0
130.35		4.9	5.0				2.5													12.4
130.40		8.7	4.4																	13.1
130.50								2.9	5.8	2.9	5.7		2.9							20.2
130.55	7.4			2.5																9.9
133.25							3.8		7.6											11.4
133.30		5.5	5.5																	11.0
133.35		6.1				12.1		12.1	42.4	12.1										84.8
133.40	3.7	73.8					7.4													84.9
137.23	101.0	35.5	11.0	5.5																153.0
137.30	9.3	269.7	176.7	130.2	130.2	86.8	111.6	130.2	86.8	15.5	18.6	3.1	3.1							1171.8
137.35	4.9	137.8	189.4	76.3	27.1	14.8	17.2	22.1	7.4			2.5		2.5		2.5				504.5
137.40								2.8												2.8
Total	634.3	1186.1	776.9	537.6	362.5	328.2	311.1	278.1	253.8	93.9	51.9	24.3	14.2	2.5	18.2	7.2	4.7	0	0	4885.5

Table IV (cont'd)
Record of Anchovy Larvae, 1953

Station	Midpoint of Size Class (in mm.) 2.5	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5307:																				
73.60			3.2																	3.2
80.51					5.5	11.0														16.5
80.60								23.4												23.4
80.70						5.6														5.6
83.40	5.4			7.1																12.5
83.43			27.1	27.1	108.5															162.7
85.39	74.9	87.4	99.8	62.4	99.8	62.4	25.0													511.7
85.40	221.7	108.3	205.9	140.0	89.8	34.3	21.1	13.2	2.6											836.9
85.45				24.3	48.7		12.2													85.2
85.50							13.1													13.1
87.40	13.8		6.9	20.6	20.7	55.0	41.3	13.8	20.6		6.9									199.6
90.28	31.9	58.5	39.9	45.2	58.5	29.2	16.0		10.6											289.8
90.30	684.4	227.1	424.8	227.1	85.5	56.0	41.3	17.7	17.6											1781.5
93.27	144.2	74.2	80.6	99.6	31.8	17.0	12.8	6.3	4.2											470.7
93.30	12.0	18.0	62.8	59.8	35.9	6.0	6.0	6.0												206.5
97.30	14.8	26.7	32.6	22.2	14.8	8.9	17.7	10.3	1.5	1.5										151.0
97.35		6.0	12.0	12.0		6.0														36.0
100.29	2.6	2.6																		5.2
100.30	5.8	2.9	11.6	2.9																23.2
100.45										3.3										3.3
103.30	29.8	6.4	4.3	2.1																42.6
107.32			49.8	9.0	9.0															67.8
107.35	14.2	2.8	2.8																	19.8
110.33	4.6																			4.6
110.60			2.6																	2.6
113.30										8.2										8.2
113.35	4.4		4.4																	8.8
113.40				2.0																2.0
117.26	1.6	1.6	1.6		1.6	6.2	15.6	6.2		1.6										36.0
117.30						1.8		3.6	1.8				1.8							9.0
117.35	82.6	20.6	6.8	6.9				3.4	3.4										3.4	127.1
120.30	6.5	13.0	6.5	3.2			6.5		3.2											38.9
120.35	30.4	38.0	15.2	7.6	15.2	15.2	22.8													144.4
123.40	28.0	4.0				2.0	2.0													36.0
123.45		3.6									3.6									7.2
127.34	53.0	26.5			26.5															106.0
127.40		4.9	12.2	4.8																21.9
127.45						2.6								2.6						5.2
127.50			1.9					3.8	5.7	3.8	1.9	1.9								19.0
130.35			2.8	19.9	5.7	25.6	2.8		2.8	2.8				2.8						65.2
130.40								2.3												2.3
130.50								2.0												2.0
130.60		3.0																		3.0
137.23				4.7			4.7	4.7		4.7										18.8
137.30										2.6										2.6
Total	1466.6	736.1	1118.1	810.5	657.5	344.8	260.9	116.7	74.0	28.5	12.4	1.9	1.8	5.4	0	0	0	0	3.4	5638.6

Table IV (cont'd)
Record of Anchovy Larvae, 1953

Station	Midpoint of Size Class (in mm.)																		
	2.5	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5308:																				
63.52	4.2																			4.2
80.51			3.4	3.4	3.4	10.2	10.2		6.8	10.2		3.4	3.4							54.4
80.60	7.4			7.4																14.8
83.40		0.5		0.5	0.5															1.5
83.43	4.4	17.8		4.4																26.6
83.48		2.4				2.4														4.8
83.51	2.8		2.8	2.8	11.1		2.8													22.3
83.55	15.9		9.6	3.2	3.2		3.2													35.1
85.39	2.4	2.4																		4.8
85.40	10.2																			10.2
87.35		10.9	2.2	6.6	4.4															24.1
87.40	7.5		3.7		3.7															14.9
87.45									2.8											2.8
87.50	6.0	6.0	2.0	2.0																16.0
90.30	10.2	15.3	10.2																	35.7
93.27				41.5	31.1	25.9	10.4	10.4	10.4											129.7
93.30	13.3	13.4	20.0	46.6	33.3	26.7	13.4		6.7											173.4
97.30	29.4	22.1	44.1	26.9	7.4	9.8	12.2	7.3	7.3	4.8										171.3
97.35	4.7	47.2	51.9	47.2	37.8	4.7	14.1	9.4		4.7										221.7
100.30				10.1		3.4			3.4	3.4										20.3
100.35				10.7	10.7															21.4
100.40							7.2		7.2											14.4
103.30			2.2	4.4	2.2	2.2	2.2		2.2											15.4
110.33	10.2																			10.2
110.35		5.1		5.1	5.1			5.1												20.4
110.40		10.2	3.4							3.4										17.0

Table IV (cont'd)
Record of Anchovy Larvae, 1953

Station	Midpoint of Size Class (in mm.)																		
	2.5	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5308 (cont'd):																				
113.30		3.3	9.9																	13.2
117.26	2.9	11.6	14.5	2.9	2.9	2.9														37.7
117.30		3.2	22.4	12.8																38.4
117.35		2.4				2.4														4.8
117.40							7.4													7.4
120.25	2.6		12.9	15.5	15.5	2.6	5.2	2.6												56.9
120.30	17.8	26.7	71.3	74.2	62.4	14.9	3.0												50.5	320.8
120.35	225.4	56.4	90.8	100.2	103.3	47.0	119.0	100.2	40.7		3.1									886.1
120.45		3.8	15.2	15.2	30.4	7.6														72.2
120.60			3.3	3.3	6.5	3.3				3.3										19.7
123.37	4.4	2.2	4.4		2.2	2.2		2.2												17.6
123.40	31.7	5.3	2.6	5.2		7.9	7.9													60.6
123.45		3.8	3.8	3.8			3.8													15.2
123.50		12.4	3.1																	15.5
127.34	5.6	39.4	22.5	11.3		5.6														84.4
127.40			5.8				2.9													8.7
127.45																			3.7	3.7
130.30			3.5					7.0		3.5	7.0	3.5	7.0	3.5	3.5					38.5
130.35	3.6			7.2	3.6			3.6												18.0
133.25							2.0													2.0
133.30	2.2	6.6	15.2	8.8	4.4		2.2													39.4
137.30									2.7			2.7		2.7						8.1
Total	424.8	330.4	456.7	483.2	385.1	181.7	229.1	147.8	90.2	33.3	10.1	9.6	10.4	6.2	3.5				54.2	2856.3

Table IV (cont'd)
Record of Anchovy Larvae, 1953

Station	Midpoint of Size Class (in mm.)																		
	2.5	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5309:																				
83.40	440.8	114.0	30.4	15.2	7.6			7.6	22.8	30.4	7.6	22.8								699.2
83.43	13.6	20.5	20.5	34.2			13.6													102.4
83.48	2.5	2.5	2.5	7.4		4.9	2.5	2.5		2.5										27.3
83.51								2.9												2.9
83.55													5.9							5.9
85.39	8.9		14.9	14.9	3.0	3.0	6.0	12.0		3.0										65.7
85.40	5.8	2.9	2.9	5.8	2.9	2.9		2.9												26.1
85.45	5.8	5.8		5.8	5.8															23.2
85.50					2.6			2.6		2.6										7.8
85.55			2.9		5.8		2.9		11.6	5.8	2.9	2.9			2.9					37.7
87.35		15.4	4.4	4.4	2.2	2.2	2.2													30.8
87.40	4.3	8.6	29.8	34.1	46.9	44.7	38.4	29.8	17.0	6.4		2.1								262.1
87.45				5.1	5.1		5.1													15.3
113.30	6.6	2.2	2.2			6.7														17.7
113.35	2.8	2.8	5.6	2.8																14.0
115.26		2.2				6.5	2.2	2.2												13.1
115.30	9.9	4.0	15.8	25.7	21.8	17.8	17.8	9.9	4.0	4.0	2.0								4.0	136.7
115.35	3.3	31.3	193.8	86.3	48.2	15.7	20.1	12.3	5.6											416.6
117.26	1.2	2.4	4.6	8.0	2.3	5.8	3.5													27.8
117.30	57.9	23.5	68.8	70.6	27.2	16.3	7.2	3.6	3.6	7.2	1.8	1.8								289.5
117.35	8.3	33.1	41.4	24.8	13.8	2.8	2.8													127.0
117.40					2.9		2.9													5.8
118525		8.0	4.0	4.0	4.0	1.3	2.7	1.3												25.3
118530	28.2	23.9	6.5	2.2	6.5	4.3	2.2													73.8
118535	36.3	6.6	3.3	3.2	1.6	3.3	3.2	3.2	1.6											62.3
119.42							2.0	6.1	6.0	10.1										24.2
120.25	2.4	90.3	34.1	8.6	7.3	3.6	1.2		1.2											148.7
120.30	8.9	11.8	23.7	47.4	62.1	20.7	6.0	5.9												186.5
120.35																			1.9	1.9
120.43	4.8						2.4													7.2
121.30	1.4	7.2	15.9	15.8	14.4	20.2	5.7													80.6
121.34	1.4	5.8	17.3	4.3	5.8	2.9			1.4											38.9
121.41						2.7						2.7								5.4
Total	655.1	424.8	545.3	430.6	299.8	188.3	152.6	104.8	74.8	72.0	14.3	32.3	5.9	0	2.9	0	0	0	5.9	3009.4

Table IV (cont'd)
Record of Anchovy Larvae, 1953

Station	Midpoint of Size Class (in mm.)																		
	2.5	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5310:																				
82347	11.7	2.9	2.9			5.8	2.9													26.2
83.40	233.3	14.6	7.3																	255.2
83.43	6.5	4.3	6.4	15.1	12.9	8.6	17.2	15.0		2.2										88.2
83.48	9.5	9.5	1.9	15.2	7.6	9.5		9.5	5.7											68.4
83.51	30.3	8.7	15.9	10.1	11.5	8.7	1.4	2.8	1.4											90.8
83.55	10.1	15.2	5.0	2.5	5.0	2.5	2.5	2.5	2.5											47.8
90.28		21.6	58.7	95.8	46.3	12.4	27.8	21.6	12.4	6.2										302.8
90.30	5.8	17.4	61.1	49.5	17.4	8.7	11.6	2.9	5.8	2.9	2.9	2.9								188.9
90.37	5.9	5.8	5.9	14.7	2.9	5.8		2.9		2.9										46.8
90.45								2.9												2.9
90.50		3.3			3.3		3.3													9.9
90.55			6.4					3.2												9.6
93.27	256.1	23.5	20.2	20.2	33.7	13.5	10.1	30.3	40.4	10.1	6.8	3.4								468.3
93.30	11.2	14.9	33.5	37.2	33.5	3.7	3.7	3.7	3.7		3.7									148.8
93.40									2.2											2.2
97.30	31.6	45.2	51.9	15.9	2.3	2.3														149.2
97.35			2.8									2.8								5.6
97.40		6.0	8.8	17.6	20.7		14.8	11.8	23.6		5.9		3.0	3.0						115.2
97.50			2.8	2.8	2.8			2.8	2.8		2.8								2.8	19.6
100.29			2.7	5.4		10.8														18.9
100.30		3.0	6.0	3.0			3.0	3.0												18.0
100.40								2.7												2.7
100.60					2.6															2.6
103.30		6.8	26.9	16.8	37.0	37.1	16.8	6.7												148.1
103.35	19.0	15.2	3.8	7.6	19.0	11.4	7.6			3.8	3.8									91.2
107.32		16.1			28.3	28.3		20.2	8.1	4.0										105.0
107.35	243.6	361.9	393.2	278.4	100.9	45.3	24.3	24.3	10.5	7.0										1489.4
107.40	292.1	14.1		24.6	56.3	52.8	10.5	10.6	7.0		3.5									471.5
110.33	11.1	55.2	36.8	18.4	14.7		3.7			3.7										143.6
110.35	47.6	153.7	36.6	14.6	11.0	7.3	14.6	3.7		3.7										292.8
110.40		15.5	7.8	11.7			3.9													38.9
110.50					3.9	7.9	27.5	3.9	11.8											55.0
113.30	8.2																			8.2
113.35	6.8			6.8	3.4	23.9	6.8	17.1	10.2	20.5	17.1	20.5	23.9	13.7	6.8					177.5
113.40	136.9	241.2	22.8	26.0	13.1	6.6	29.3	71.7	84.8	61.9	45.6	22.8	9.8	6.6	3.3					782.4
117.26		2.9																		2.9
117.30	5.4	2.7			2.7															10.8
117.35	3.2				3.2		3.2	3.2												12.8
117.40		3.2		3.2	9.5	3.2	3.2													22.3
120.25		2.9		2.9																5.8
120.30	29.7	35.1	29.7	5.4	5.4	2.7														108.0
120.35		3.4	10.2	6.8	6.8					3.4										30.6
120.45			3.6																	3.6
120.50				3.6																3.6
123.40					3.2															3.2
Total	1415.6	1125.8	871.6	731.8	520.9	318.8	249.7	279.0	232.9	132 3	92.1	52.4	36.7	23.3	10.1	0	0	0	2.8	6095.8

Table IV (cont'd)
Record of Anchovy Larvae, 1953

Station	Midpoint of Size Class (in mm.)																		
	2.5	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5311:																				
81[8]46	221.9	40.9	40.9	38.0	26.3	5.8	14.6													388.4
82[3]47	404.0	93.2	15.6	7.8	20.7	10.4														551.7
83.40	218.0	12.9	6.5	3.9	2.6		1.3													245.2
83.43	16.3	39.3	68.6	26.2	9.8	16.4	3.3													179.9
83.48	55.0	122.4	59.6	61.2	37.7	44.0	45.6	32.9	26.6	11.0	6.3									502.3
83.51	26.6	43.3	66.6	133.2	76.6	29.9	20.0	10.0	10.0	3.3										419.5
83.55	30.2	50.4	60.5	68.0	108.3	83.1	60.5	25.2	10.0	5.0										501.2
83.60							2.4			2.4										4.8
85.39	120.0	186.0	196.0	252.0	218.0	154.0	58.0	12.0	8.0	2.0										1206.0
85.40	43.9	46.9	84.5	159.6	159.6	175.2	40.6	40.6	9.4	6.2	3.1									769.6
85.45	34.8	34.8	75.4	153.7	89.9	52.2	20.3													461.1
85.50	27.7		7.9	7.9	4.0		4.0													51.5
85.60												1.8								1.8
87.35	388.8	702.0	374.4	237.6	183.6	61.2	39.6	7.2	3.6											1998.0
87.40	10.3	5.2	10.2	10.2	17.9	15.4	17.9	12.8												99.9
87.45	30.6		3.8				11.4	3.8	7.6											57.2
87.55			3.6		3.6		7.2	7.2												21.6
87.60							2.5	7.5												10.0
Total	1628.1	1377.3	1074.1	1159.3	958.6	647.6	349.2	159.2	75.2	29.9	9.4	1.8	0	0	0	0	0	0	0	7469.7

Table IV (cont'd)
Record of Anchovy Larvae, 1953

Station	Midpoint of Size Class (in mm.)																		
	2.5	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5312:																				
81846	152.4	191.1	191.2	145.2	67.7	79.9	41.1	9.7	2.4	2.4										883.1
82347	123.1	192.7	112.0	78.4	53.7	42.6	15.7	4.5												622.7
83.40	225.6	169.2	42.3	30.6	11.7	9.4	11.7	9.4	7.1	7.1										524.1
83.43	43.3	151.8	89.4	81.3	46.1	29.9	5.4	2.7												449.9
83.48	49.7	69.7	119.6	86.4	73.0	36.5	26.5	9.9	6.6		3.3									481.2
83.51	308.8	116.1	147.9	113.5	55.5	44.9	34.4	13.2	5.3											839.6
83.55	47.3	109.5	145.0	118.4	82.9	41.4	17.8			5.9										568.2
83.60											2.3		2.3	2.3						6.9
85.39	28.6	28.6	47.6	35.7	14.3	14.3	9.5	2.4												181.0
85.40	48.1	130.9	240.2	192.2	112.2	61.4	58.8	18.7	10.7	10.7	2.7									886.6
85.45	22.2	7.4	7.4	24.6	41.8	36.9	17.2	14.7	2.5	4.9	2.5				2.5					184.6
85.50	69.1	53.7	46.0	97.3	143.4	143.4	64.0	25.6	7.7											650.2
87.35	312.4	300.1	100.9	56.6	39.3	34.5	19.7	29.6	5.0	2.5	4.9									905.5
87.40		80.7	45.4	75.6	60.5	121.0	40.3	80.7	30.3		5.0									539.5
87.45	48.1	242.9	88.6	35.4	73.3	93.6	58.2	37.9	15.2											693.2
87.50	19.0	52.4	16.7	23.8	2.4	7.1	4.8								2.4			2.4		131.0
87.55					5.0	2.5	7.6	5.0		2.5										22.6
90.28	167.9	249.8	406.6	285.1	163.5	33.2	33.2	13.2												1352.5
90.30	16.3	76.6	41.3	37.1	27.9	13.9	2.3	2.3												218.2
90.37	29.0	13.1	7.9	13.1	10.5		2.6													76.2
90.45	40.5	21.6	8.1		2.7		2.7	8.1												83.7
90.50	60.7	31.6	26.7	24.3	9.7		4.8	2.4												160.2
90.55	2.7	10.6	2.7																	16.0
93.27	35.3	44.6	28.2	30.5	14.0	21.1	21.1	11.7	4.7	9.4	2.4	2.4								225.4
93.30	202.3	409.9	91.1	45.5	25.3	35.4	5.1	5.1												819.7
93.40	11.7	11.8			2.9															26.4
93.50					3.1															3.1
97.30	325.0	282.1	145.4	131.1	122.6	59.8	22.8	11.4	5.6		2.8									1108.6
97.35	2.6		15.4	12.8	12.8		2.6	10.3				2.6								59.1

Table IV (cont'd)
Record of Anchovy Larvae, 1953

Station	Midpoint of Size Class (in mm.) 2.5	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.75	17.25	19.25	21.25	23.25	Dis.	Total
Cruise 5312 (cont'd):																				
97.40	5.2			2.6	7.8	7.8	7.8	2.6												33.8
97.50	4.8	24.2		4.8	4.8			14.5	4.8				4.8						4.8	67.5
100.29	2.2	2.2	4.4	9.0	13.4	17.9	11.2	2.2		2.2										64.7
100.30	18.8	45.7	26.9	53.8	64.5	18.9	2.7			2.7										234.0
100.40	92.9	30.1	48.7	37.1	16.3	9.2	11.6	2.3												248.2
103.30	2.4																			2.4
103.35	2.8				5.5	2.8		2.8												13.9
107.32			2.2	2.2	2.2		2.2	2.2												11.0
107.35		2.5	5.0	4.9	7.4	2.5														22.3
107.40	4.8	21.6	26.3	59.7	14.4	26.3	7.2		2.4	2.4										165.1
110.33	1.9	9.5					1.9													13.3
110.35	18.7	2.3	2.3					2.3												25.6
110.40	4.5	2.2																		6.7
113.30			5.6																	5.6
117.30	3.7	13.0	3.8	5.6	1.9															28.0
118.33			2.6																	2.6
120.30	1.8																			1.8
120.45				2.7																2.7
121.31	2.0																			2.0
123.37						8.9	20.8	11.9	8.9				3.0							53.5
123.40				9.3	6.2	34.2	34.2	31.1	6.2	12.4	18.6									152.2
127.34				4.6																4.6
130.30	9.9				2.0	2.0														13.9
133.25			3.7	9.2	9.3	1.8														24.0
133.30					1.8			1.8												3.6
137.23					1.9	3.8														5.7
Total	2568.1	3201.8	2345.6	1980.0	1437.2	1098.8	629.5	402.2	125.4	65.1	44.5	5.0	10.1	2.3	4.9	0	0	2.4	4.8	13927.7

Table V

Record of the Larvae of Jack Mackerel (Trachurus symmetricus), 1953

Station	Midpoint of Size Class (in mm.)																		
	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.75	6.75	7.75	8.75	9.75	10.75	11 75	12.75	13.75	14.75	15.26 & over	Dis.	Total
Cruise 5301																				0
Cruise 5302:																				
83.43	2.6																			2.6
100.60										3.3										3.3
100.90	19.3	70.6	51.4	22.5	12.8															176.6
105.40				3.2																3.2
105.60						3.1														3.1
110.40							2.8													2.8
110.60	12.1	9.1	6.1	3.0																30.3
113.30	2.2																			2.2
113.60	10.2	10.2																		20.4
117.60	3.2		3.2																	6.4
Total	49.6	89.9	60.7	28.7	12.8	3.1	2.8	0	0	3.3	0	0	0	0	0	0	0	0	0	250.9
Cruise 5303:																				
80.100									4.9											4.9
90.60						3.8			3.8											7.6
90.90		6.3	66.4	12.6	3.2			3.2												91.7
97.35															2.9					2.9
100.29					5.1															5.1
100.40					22.9	11.4		11.4												45.7
100.50					8.6	48.4	22.8	2.8												82.6
100.60				5.4						2.7		2.7								10.8
100.70			5.8	11.6	8.7															26.1
100.80			3.0	3.0	12.0	15.0	3.0		3.0											39.0
105.35								2.1		2.1										4.2
105.40						5.3		13.2	2.6											21.1
105.50	11.1			11.1	5.5	5.5			5.5											38.7
105.60		5.5			11.1															16.6
105.70	21.7	16.3	10.8			5.4			5.4											59.6
105.80		8.7	11.6	8.7	37.6	28.9	14.4													109.9
110.35	11.5																			11.5
110.40	8.4	11.2					2.8	2.8												25.2
110.50	38.5	35.8	8.2	5.5			24.8	24.8												137.6
110.60	2.6				2.6	7.7	15.4	18.0	2.6											48.9
110.70	11.2	2.8	5.6	2.8	11.2	8.4		2.8		5.6										50.4
113.40		2.4												2.4						4.8
113.45									2.5	2.5		2.5		2.5						10.0
113.50	2.3	4.5																		6.8
113.55				3.2																3.2
113.60	3.4		3.4																	6.8
117.55	3.0	18.0	6.0					3.0												30.0

Table V (cont'd)
Record of the Larvae of Jack Mackerel (Trachurus symmetricus), 1953

Station	Midpoint of Size Class (in mm.) 2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.26 & over	Dis.	Total
Cruise 5303 (cont'd):																				
117.60	8.8	5.9	11.8																	26.5
133.35		2.8																		2.8
Total	122.5	120.2	132.6	63.9	128.5	139.8	83.2	84.1	30.3	12.9	0	5.2	0	4.9	2.9	0	0	0	0	931.0
Cruise 5303 (Late March):																				
113.40									2.4											2.4
113.50		2.5	5.0																	7.5
113.60			11.6																	11.6
117.40			3.0								3.0									6.0
117.45		2.6	5.1																	7.7
117.50				3.4																3.4
117.55			2.9	8.8	2.9	2.9														17.5
117.70			17.0	13.6	13.6															44.2
120.50								2.5												2.5
120.60			3.0	6.1	3.0							3.0								15.1
120.70														2.9						2.9
123.55												2.9								2.9
Total	0	5.1	47.6	31.9	19.5	2.9	0	2.5	2.4	0	3.0	5.9	0	2.9	0	0	0	0	0	123.7
Cruise 5304:																				
80.120	54.1		4.9	2.5																61.5
80.145		3.4	1.7	1.7																6.8
80.152			2.6	2.6																5.2
80.160			5.3	10.5	2.6															18.4
90.70												2.3								2.3
90.130				6.7																6.7
90.138		2.5	7.5	30.1	22.6	12.6														75.3
90.145	2.5			5.1	2.5															10.1

Table V (cont'd)
Record of the Larvae of Jack Mackerel (Trachurus symmetricus), 1953

Station	Midpoint of Size Class (in mm.) 2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.26 & over	Dis.	Total
Cruise 5304 (cont'd):																				
97.40			3.1																	3.1
97.70	6.0	6.0																		12.0
97.80		6.4	3.2							3.2										12.8
97.90	3.4	13.6	54.6	13.6	3.4															88.6
100.40							3.4	3.4												6.8
100.45	10.2																			10.2
100.70				2.8	2.8	5.6	5.6													16.8
100.80			2.7	5.4																8.1
100.90						2.8	2.8													5.6
103.35	5.6	11.2																		16.8
103.40			2.7																	2.7
103.45							2.5													2.5
103.70	2.9		14.4	8.7	2.9	2.9		5.8	2.9											40.5
103.80			10.6		7.9	2.6	2.6	2.6												26.3
107.35			2.7																	2.7
107.40	9.3											3.1								12.4
107.45			3.0		6.1		3.0		3.0											15.1
107.55				3.4		3.4	3.4		3.4											13.6
107.60	2.8	5.6																		8.4
107.80	33.6	22.4	11.2			2.8	2.8													72.8
107.90	3.3	9.9	9.9		6.6	6.6														36.3
110.50	6.4	6.4							3.2	3.2										19.2
110.55	23.9	53.8	6.0							3.0										86.7
110.60	10.0	16.6																		26.6
110.70	3.2	9.6	6.4				3.2													22.4
110.80	10.5		10.5																	21.0
110.90		9.2	9.2																	18.4
113.35	20.1	8.0	2.0		2.0				2.0											34.1
113.40		6.3																		6.3
113.45			5.9																	5.9
113.50							3.0	3.0				3.0								9.0
113.55	5.9	2.9	2.9																	11.7
117.50			3.2																	3.2
117.55				2.8																2.8
117.60						2.6						2.6								5.2
117.70	2.9	2.9					2.9													8.7
120.50				5.6	2.8															8.4
120.55	5.7			8.6						2.8										17.1
120.60	2.7			13.5																16.2
Total	225.0	196.7	186.2	123.6	62.2	41.9	35.2	14.8	14.5	12.2	0	11.0	0	0	0	0	0	0	0	923.3

Table V (cont'd)
Record of the Larvae of Jack Mackerel (Trachurus symmetricus), 1953

Station	Midpoint of Size Class (in mm.)																		
	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.26 & over	Dis.	Total
Cruise 5305:																				
80.90	5.6																			5.6
80.100	6.6			1.3			1.3													9.2
80.120			24.0	14.4		2.4	2.4	2.4												45.6
80.130			3.0																	3.0
80.138		2.6	18.3	23.6	2.6			2.6												49.7
80.145	5.4	27.1	13.6	2.7	5.4															54.2
80.153	3.0	24.1	45.2	9.0	27.1	15.0		3.0												126.4
80.160	12.2			6.1	3.0															21.3
83.80			6.6	6.6																13.2
83.90		2.9																		2.9
87.60E	2.9	2.9		8.8	2.9		2.9	2.9												23.3
87.70	2.0		2.0																	4.0
87.80		2.3																		2.3
87.90		2.6																		2.6
90.35								4.2												4.2
90.90		2.5																		2.5
90.120		4.9	4.9	4.9																14.7
90.130			3.1																	3.1
90.138	2.8	2.8		2.8	2.8	2.8														14.0
90.145	7.5	15.1		3.8	3.8															30.2
90.153	2.5	17.2	4.9		2.5															27.1
90.160	13.4	1.9																		15.3
93.35			8.4																	8.4
93.50		5.3																		5.3
97.40		2.8	8.6	5.7																17.1
97.45			6.6	9.9																16.5
97.70		5.6					2.8													8.4
100.70			6.4			12.8	6.4	6.4												32.0
100.80		9.0	9.0		12.0	15.0			3.0											48.0
100.90		3.0	3.0			3.0													3.0	12.0
103.30	7.0	4.7				2.3														14.0
103.35	5.8	5.8		2.9																14.5
103.45		2.6	2.6																	5.2
103.50		14.4	2.9	5.7	2.9	8.6	2.9	8.6	5.7											51.7
103.55	12.6						6.3	6.3	6.3											31.5
103.60								5.7												5.7
103.70	5.5		11.0	27.6	11.0		5.5	11.0												71.6
103.80			2.4		4.9															7.3
103.90		3.0					3.0													6.0
107.35	2.6	7.8	2.6																	13.0

Table V (cont'd)
Record of the Larvae of Jack Mackerel (Trachurus symmetricus), 1953

Station	Midpoint of Size Class (in mm.) 2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.26 & over	Dis.	Total
Cruise 5305 (cont'd):																				
107.50		6.2	9.3	9.3	6.2	6.2	3.1	15.5	12.4										3.1	71.3
107.55				6.8	6.8			6.8												20.4
107.60			3.3		3.3															6.6
107.70		3.0	6.0		3.0	15.0		9.0												36.0
107.80			5.6	2.8	8.5			2.8												19.7
107.90	3.2	6.4	3.2																	12.8
110.35			13.6	3.4	3.4			3.4	3.4											27.2
110.40			8.6				2.8			5.7										17.1
110.45			2.6	5.2	5.2	5.2	2.6	7.9	5.2											33.9
110.50	8.3	5.6		2.8			2.8	2.8	2.8											25.1
110.55	8.9	8.9			3.0				8.9											29.7
110.70						2.8														2.8
110.80		2.4				4.8														7.2
110.90	7.8	2.6	2.6		2.6															15.6
113.35			5.4																	5.4
113.40	12.5	9.4						3.1	6.3											31.3
113.45		3.0	3.0	6.0					6.0	3.0										21.0
113.50	9.3		9.3																	18.6
113.60		2.4					2.4		2.4											7.2
113.70		17.5	32.0																	49.5
117.50	5.5	5.5												2.8						13.8
117.70			7.6	2.5	5.0															15.1
120.30				5.4																5.4
120.50	11.8		5.9																	17.7
120.60																	2.8			2.8
120.80		2.4																		2.4
120.90					5.3															5.3
123.45	9.5	9.5	11.9																	30.9
123.50	9.1	15.2	18.2	6.1																48.6
123.55			8.5																	8.5
123.60				2.3	2.3															4.6
127.45	4.9	4.9																		9.8
127.50	4.2																			4.2
127.60			2.9																	2.9
130.45						3.4														3.4
130.50		7.9	13.2				2.6													23.7
133.50					2.7															2.7
Total	192.4	285.7	361.8	188.4	138.2	99.3	49.8	104.4	62.4	8.7	0	0	0	2.8	0	0	2.8	0	6.1	1502.8

Table V (cont'd)
Record of the Larvae of Jack Mackerel (Trachurus symmetricus), 1953

Station	Midpoint of Size Class (in mm.)																		
	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.26 & over	Dis.	Total
Cruise 5306:																				
70.80			5.8	5.8	5.8															17.4
70.100										15.9										15.9
80.60				5.3																5.3
80.80			8.7				2.9	2.9	2.9											17.4
80.90					11.5		11.5	23.0												46.0
83.65		15.3	15.3		30.6	38.3	30.6	15.3												145.4
83.70		6.4		6.4	32.0	38.4	6.4													89.6
83.80			12.2	6.1	6.1	18.2	12.2	12.2	6.1	6.1										79.2
83.90		3.1	6.1	3.1	12.2	3.1														27.6
85.50									3.0											3.0
87.60			13.9					6.9												20.8
87.65	4.7	37.7	18.8	9.4	14.1			4.7												89.4
87.70		6.7	6.7	6.7																20.1
87.90								2.8												2.8
90.80		5.7	8.6	2.9	2.9		2.9	5.7												28.7
90.90				3.5						3.5										7.0
93.27		5.6			5.6															11.2
93.55			6.0																	6.0
93.65	4.6		4.6				9.2		4.6											23.0
93.70			15.8	5.3	5.3	5.3	5.3													37.0
93.80	8.2	8.2	20.4		6.1	8.2	14.3	20.4	30.6	4.1										120.5
93.90								3.2												3.2
97.30			2.4																	2.4
97.35	3.4	34.5	24.2	3.4					6.9											72.4
97.40							3.2													3.2
97.50		6.8	6.8																	13.6
97.60	11.2	33.7	78.7	28.1	28.1	28.1	11.2													219.1
97.65			8.5	8.5	39.6	36.8	28.3	42.4	14.2		5.7									184.0
97.70		6.0	12.0	6.0	6.0		12.0													42.0
97.80		3.3				3.3	9.8													16.4
97.90		18.4	13.2	2.6				2.6												36.8
100.40						2.8														2.8
100.45	12.2	24.3	18.2	12.2	6.1															73.0
100.50							24.6	12.3												36.9
100.55	18.3	9.2		9.2	4.6	4.6														45.9
100.60				7.1																7.1
100.65											6.6									6.6
100.70	14.0	9.3	18.6	14.0				4.7												60.6
100.80	3.1	15.6	3.1		3.1	3.1	3.1													31.1
100.90	3.6	3.6	10.6																	17.8
100.100	2.7	5.4	2.7	2.7																13.5
103.50			6.1							3.1										9.2
103.55	4.2	4.2	12.6				4.2	4.2	8.4											37.8
103.60							5.2	5.2												10.4
103.65	6.2	6.2							6.2											18.6
103.70	6.1	12.2				6.1	6.1	6.1	12.2											48.8

Table V (cont'd)
Record of the Larvae of Jack Mackerel (Trachurus symmetricus), 1953

Station	Midpoint of Size Class (in mm.) 2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.26 & over	Dis.	Total
Cruise 5306 (cont'd):																				
103.80			2.8				2.8	2.8												8.4
103.90			7.3	4.9		2.4	2.4													17.0
107.35				2.8						2.8										5.6
107.40									28.1	9.4	9.4							9.4		56.3
107.45																		4.7		4.7
107.50						5.1			10.1											15.2
107.55								5.6	5.6				2.8							14.0
107.60									6.7	2.2	2.2									11.1
107.65			2.4	2.4	2.4	4.7	14.1	23.5	11.8	2.4										63.7
107.70			3.0	8.9	3.0			3.0												17.9
110.35					5.5	5.5			5.5											16.5
110.40		6.2								6.2	3.1	6.2								21.7
110.45									2.9											2.9
110.55														2.9						2.9
110.60										2.5										2.5
110.70						2.6														2.6
113.40										2.6	5.3			2.6						10.5
113.45	2.6	2.6																		5.2
113.50																3.0				3.0
113.55	8.4	2.8	2.8								2.8									16.8
113.60	33.2	90.1	80.6	4.7																208.6
113.70						2.7		5.4												8.1
117.40		5.3						2.6		7.9										15.8
117.45	2.1	2.1			2.1						2.1									8.4
117.50																2.8				2.8
117.55	177.1	225.4	25.8	9.7																438.0
117.60	14.4	20.2	2.9						2.9											40.4
117.65	2.0																			2.0
120.50	4.9	102.1	182.2	148.2	24.3	4.9		2.4	4.9											473.9
120.55			2.4																	2.4
120.60											2.5									2.5
120.70				4.8		1.6				1.6										8.0
120.90					3.7	1.8														5.5
123.40		5.3	5.3																	10.6
123.50						6.0	6.0													12.0
123.55	17.3	34.7	57.8	34.7	5.8	2.9	5.8	2.9												161.9
123.60		2.2	9.0		2.2															13.4
127.50	9.2	4.6																		13.8
130.45																		8.5		8.5
130.50		2.8	2.8																	5.6
130.55	2.5	9.8																		12.3
137.50								2.4												2.4
Total	376.2	797.6	747.7	369.4	268.7	236.5	234.1	231.9	169.1	70.3	37.5	6.2	2.8	5.5	C	5.8	0	22.6	0	3581.9

Table V (cont'd)
Record of the Larvae of Jack Mackerel (Trachurus symmetricus), 1953

Station	Midpoint of Size Class (in mm.)																		
	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.26 & over	Dis.	Total
Cruise 5307:																				
67.55			4.1		4.1															8.2
77.65		3.1	9.4	15.7	9.4	9.4	3.1	6.3	3.1											59.5
80.70			5.6	5.6																11.2
80.90		2.6															2.6	8.0		13.2
85.40									2.6											2.6
85.45			36.5		12.2		12.2		12.2											73.1
87.40		13.8		13.8	13.8	13.8		6.9												62.1
87.50		4.3																		4.3
87.55				5.9					5.9											11.8
90.37											5.5	5.5			5.5					16.5
90.50							3.3													3.3
90.55				8.7					8.7											17.4
90.60		27.5	13.8					13.8												55.1
90.70						17.5		17.5												35.0
93.30				3.0																3.0
93.40																		2.5		2.5
93.50									7.4											7.4
97.30	1.5																			1.5
97.40	2.8																			2.8
97.50		6.2	6.2																	12.4
100.30	5.8																			5.8
100.45		3.3							3.3	3.3										9.9
100.50		7.1						7.1												14.2
107.35		2.8	11.4	2.8	2.8															19.8
107.40	10.4	51.8	2.6	7.8	5.2	2.6	5.2	2.6		2.6										90.8
110.40	2.6													5.2	2.6					10.4
110.60	5.3	10.6																		15.9
117.35	6.9																			6.9
120.60									2.5											2.5
120.70		2.9																		2.9
Total	35.3	136.0	89.6	63.3	47.5	43.3	23.8	54.2	45.7	5.9	5.5	5.5	0	5.2	8.1	0	2.6	10.5	0	582.0

Table V (cont'd)
Record of the Larvae of Jack Mackerel (Trachurus symmetricus), 1953

Station	Midpoint of Size Class (in mm.)																			
	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.26 & over	Dis.	Total
Cruise 5308:																				
67.65			5.7																	5.7
80.90							2.4													2.4
80.100								2.3												2.3
87.50	2.0	2.0																		4.0
90.45			3.0																	3.0
93.40		2.7																		2.7
97.30	2.4																			2.4
100.50									3.1											3.1
100.55		3.3																		3.3
110.35				5.1																5.1
110.40		3.4																		3.4
Total	4.4	11.4	8.7	5.1	0	0	2.4	2.3	3.1	0	0	0	0	0	0	0	0	0	0	37.4
Cruise 5309:																				
87.50							2.5													2.5
Total	0	0	0	0	0	0	2.5	0	0	0	0	0	0	0	0	0	0	0	0	2.5
Cruise 5310:																				
90.28		3.1																		3.1
93.27									3.4											3.4
93.40		2.2									2.2									4.4
97.30			2.3				2.8				2.8									2.3
97.35			2.8			3.0	3.0													8.4
97.40			3.0																	9.0
97.50		2.8	11.2		11.2		5.6	8.4												39.2
100.40									2.7											2.7
103.40					6.8				3.4											10.2
110.50			3.9							3.9			3.9							11.7
110.60								6.4		6.4		3.2								16.0
117.40			3.2																	3.2
120.80											3.1	6.2					3.1			12.4
133.25					3.2															3.2
Total	0	8.1	26.4	0	21.2	3.0	11.4	14.8	9.5	10.3	8.1	9.4	3.9	0	0	0	3.1	0	0	129.2
Cruise 5311:																				0
Cruise 5312:																				0

Table VI
Record of the Larvae of Pacific Mackerel (Pneumatophorus diego), 1953

Station	Midpoint of Size Class (in mm.)																			
	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.26 & over	Dis.	Total
Cruise 5301:																				
137.23	2.1																			2.1
143.55											2.3									2.3
147.20	2.0										2.0									4.0
147.25											2.6									2.6
150.30				2.7		2.7			2.7	2.7										10.8
150.40																	2.4	2.4		4.8
Total	4.1	0	0	2.7	0	2.7	0	0	2.7	2.7	6.9	0	0	0	0	0	2.4	2.4	0	26.6
Cruise 5302:																				
120.25		32.5																		32.5
Total	0	32.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32.5
Cruise 5303:																				
113.60								3.4												3.4
123.45			2.6																	2.6
127.34	11.6	5.8																		17.4
130.50							2.8													2.8
133.25					2.7															2.7
137.35				2.5																2.5
Total	11.6	5.8	2.6	2.5	2.7	0	2.8	3.4	0	0	0	0	0	0	0	0	0	0	0	31.4
Cruise 5303(Late March):																				
113.60			2.9																	2.9
120.25	3.5																			3.5
120.40	8.3																			8.3
123.50		8.6	11.5	11.5																31.6
127.45		5.7	5.7																	11.4
127.50		3.0	3.0																	6.0
130.40			6.4	9.6																16.0
130.50	3.1	6.3																		9.4
137.30					2.3															2.3
Total	14.9	23.6	29.5	21.1	2.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	91.4

Table VI (cont'd)
Record of the Larvae of Pacific Mackerel (Pneumatophorus diego), 1953

Station	Midpoint of Size Class (in mm.)																			
	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.26 & over	Dis.	Total
Cruise 5304:																				
83.40E		1.1																		1.1
120.35		3.2																		3.2
127.34		1.6	1.6																	3.2
127.40		3.2	28.6	25.4																57.2
127.50			13.6		2.3															15.9
127.60							5.5													5.5
130.50			10.9																	10.9
133.45						2.9														2.9
133.55					3.0															3.0
133.60				3.1	6.1															9.2
137.35		2.9																		2.9
Total	0	12.0	54.7	28.5	11.4	2.9	5.5	0	0	0	0	0	0	0	0	0	0	0	0	115.0
Cruise 5305:																				
113.45		6.0		3.0																9.0
117.50		2.8	2.8																	5.6
120.50			11.8	17.8	5.9															35.5
123.50		3.0	9.1	6.1																18.2
127.45	12.4	91.4	42.0																	145.8
130.45			6.8	3.4		3.4														13.6
130.50			13.2	13.2	2.6															29.0
133.55					2.0															2.0
Total	12.4	103.2	85.7	43.5	10.5	3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	258.7
Cruise 5306:																				
93.27	22.2	5.6																		27.8
97.70				3.0																3.0
97.90				2.6	2.6															5.2
117.55	6.4	38.6			12.9	3.2														61.1
120.30	16.3																			16.3
120.35		4.9																		4.9
120.40	3.6	1.8																		5.4
120.50		48.6	97.2	12.2																158.0
123.50				3.0				3.0												6.0
123.55			2.9																	2.9
127.40							2.4	2.4												4.8
130.35	2.5																			2.5
130.50		2.8	2.8																	5.6
130.55		4.9		2.5																7.4
133.35				6.1																6.1
137.35										2.5										2.5
Total	51.0	107.2	102.9	29.4	15.5	3.2	2.4	5.4	0	2.5	0	0	0	0	0	0	0	0	0	319.5

Table VI (cont'd)
Record of the Larvae of Pacific Mackerel (Pneumatophorus diego), 1953

Station	Midpoint of Size Class (in mm.) 2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.26 & over	Dis.	Total
Cruise 5307:																				
97.30	1.5																			1.5
110.60			8.0																	8.0
123.40	10.0	4.0																		14.0
127.40							4.9													4.9
127.50						1.9														1.9
130.40			2.3			2.3														4.6
137.23	9.4																			9.4
Total	20.9	4.0	10.3	0	0	4.2	4.9	0	0	0	0	0	0	0	0	0	0	0	0	44.3
Cruise 5308:																				
110.40		3.4	6.8																	10.2
117.40		5.0																		5.0
120.35						3.1														3.1
120.45				3.8																3.8
120.50									3.5		3.5									7.0
120.60		9.8	9.8		3.3	6.5														29.4
123.45						3.8														3.8
123.50				3.1																3.1
127.40								2.9												2.9
130.35	10.7				3.6	3.6	7.1		7.1											32.1
133.25			2.0																	2.0
133.30			13.1	15.3	8.7		4.4	13.1												54.6
133.35						3.2		9.4												12.6
133.40							3.2													3.2
137.23	7.4	9.9	9.9	12.4	5.0	7.4		7.4												59.4
137.30		5.4	2.7	8.1		2.7														18.9
Total	18.1	33.5	44.3	42.7	20.6	30.3	14.7	32.8	10.6	0	3.5	0	0	0	0	0	0	0	0	251.1

Table VI (cont'd)
Record of the Larvae of Pacific Mackerel (Pneumatophorus diego), 1953

Station	Midpoint of Size Class (in mm.)																			
	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75	13.75	14.75	15.26 & over	Dis.	Total
Cruise 5309:																				
120.25			1.2																	1.2
120.30	3.0	8.9	5.9	5.9	3.0															26.7
120.30E		4.1	2.0	2.0																8.1
120.31		2.3																		2.3
120.35		1.9																		1.9
120.43		2.4																		2.4
121.30	2.9		1.4				1.4													5.7
121.34				4.3																4.3
121.41	2.7																			2.7
121.26	2.4																			2.4
Total	11.0	19.6	10.5	12.2	3.0	0	1.4	0	0	0	0	0	0	0	0	0	0	0	0	57.7
Cruise 5310:																				
107.32	4.0																			4.0
120.30	2.7	8.1			2.7		2.7													16.2
120.35	3.4				10.2															13.6
133.25	25.6																			25.6
Total	35.7	8.1	0	0	12.9	0	2.7	0	0	0	0	0	0	0	0	0	0	0	0	59.4
Cruise 5312:																				
130.30						5.9			2.0											7.9
133.25								1.8												1.8
137.23	3.8	3.8			1.9	1.9														11.4
Total	3.8	3.8	0	0	1.9	7.8	0	1.8	2.0	0	0	0	0	0	0	0	0	0	0	21.1

Table VII

Record of the Larvae of Hake (Merluccius productus), 1953

	Cruise and Month												
	5301	5302	5303	5303 Late	5304	5305	5306	5307	5308	5309	5310	5311	5312
Sta.	Jan.	Feb.	Mar.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
60.55	-	-	-	-						-	-	-	-
60.60	-	-	-	-						-	-	-	-
60.65	-	-	-	-	-			-	-	-	-	-	-
60.70	-	-	-	-			-			-	-	-	-
60.80	-	-	-	-			-			-	-	-	-
60.90	-	-	-	-			-			-	-	-	-
60.100	-	-	-	-	-		-			-	-	-	-
60.110	-	-	-	-	-	NQ	-	-	-	-	-	-	-
60.120	-	-	-	-	-		-	-	-	-	-	-	-
63.52	-	-	-	-						-	-	-	-
63.55	-	-	-	-						-	-	-	-
63.60	-	-	-	-	-			-	-	-	-	-	-
63.65	-	-	-	-	-			-	-	-	-	-	-
67.50	-	-	-	-		-		-		-	-	-	-
67.53	-	-	-	-	-	-	-		-	-	-	-	-
67.55	-	-	-	-		-				-	-	-	-
67.60	-	-	-	-	-	-			-	-	-	-	-
67.65	-	-	-	-	-					-	-	-	-
70.51	-	-	-	-						-	-	-	-
70.55	-	-	-	-						-	-	-	-
70.60	-	-	-	-						-	-	-	-
70.65	-	-	-	-	-			-	-	-	-	-	-
70.70	-	-	-	-		3				-	-	-	-
70.80	-	-	-	-						-	-	-	-
70.90	-	-	-	-	6			-	-	-	-	-	-
70.100	-	-	-	-	-		11	-	-	-	-	-	-
70.110	-	-	-	-	-		-	-	-	-	-	-	-
70.120	-	-	-	-	-	NQ	-	-	-	-	-	-	-
73.50	-	-	-	-						-	-	-	-
73.55	-	-	-	-	-				-	-	-	-	-
73.60	-	-	-	-						-	-	-	-
77.50	-	-	-	-						-	-	-	-
77.55	-	-	-	-						-	-	-	-
77.60	-	-	-	-	-				-	-	-	-	-
77.65	-	-	-	-						-	-	-	-
80.51		10		-						-	-	-	-
80.55				-						-	-	-	-
80.60			14	-						-	-	-	-
80.65	-	-	-	-	-	-		-	-	-	-	-	-
80.70		4951	7	-	6					-	-	-	-
80.80		130		-						-	-	-	-
80.90		-	14	-						-	-	-	-

Table VII (cont'd)
Record of the Larvae of Hake (Merluccius productus), 1953

Sta.	Cruise and Month 5301 Jan.	5302 Feb.	5303 Mar.	5303 Late Mar.	5304 Apr.	5305 May	5306 June	5307 July	5308 Aug.	5309 Sept.	5310 Oct.	5311 Nov.	5312 Dec.
80.100		-	108	-						-	-	-	-
80.110	-	-	-	-			-	-	-	-	-	-	-
80.120	-	-	-	-			-	-	-	-	-	-	-
80.130	-	-	-	-			-	-	-	-	-	-	-
80.138	-	-	-	-	-		-	-	-	-	-	-	-
80.145	-	-	-	-			-	-	-	-	-	-	-
80.153	-	-	-	-	-		-	-	-	-	-	-	-
80.160	-	-	-	-			-	-	-	-	-	-	-
81.46	-	-	-	-	-	-	-	-	-		-	3	7
82.47	-	-	-	-	-	-	-	-	-				25
83.40	-	-		-	-						29	5	47
83.43		3		-							2		3
83.48			3	-						2			30
83.51				-							1		11
83.55	6		13	-								8	
83.60			81	-	12					-	-		
83.65	-	-	-	-	-	-	15	-	-	-	-	-	-
83.70	-	-	-	-				-	-	-	-	-	-
83.80	-	-	-	-	3		6	-	-	-	-	-	-
83.90	-	-	-	-	12			-	-	-	-	-	-
85.39		10	15	-	8						-	2	
85.40		8	7	-							-	6	13
85.45		11		-			10				-		7
85.50		8	14	-		2					-	8	
85.55			24	-							-		-
85.60			213	-						-	-		-
87.35	63		12	-	7						-	7	27
87.40				-							-		5
87.45			6	-							-		2
87.50				-							-	-	2
87.55				-							-		
87.60			-	-		3					-		-
87.65	-	-	-	-	-	-	9	-	-	-	-	-	-
87.70	-	-	-	-				-	-	-	-	-	-
87.80	-	-	-	-	3			-	-	-	-	-	-
87.90	-	-	-	-				-	-	-	-	-	-
90.28			6	-	10	3			-	-		-	18
90.30			3	-	5			3		-		-	5
90.37			9	-		-				-		-	3
90.41	-	-	-	-	-		-	-	-	-	-	-	-
90.45		190	3	-						-		-	
90.50	-	-	6	-	-					-		-	

Table VII (cont'd)
Record of the Larvae of Hake (Merluccius productus), 1953

	Cruise and Month												
	5301	5302	5303	5303 Late	5304	5305	5306	5307	5308	5309	5310	5311	5312
Sta.	Jan.	Feb.	Mar.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
90.53		2	-	-	-	-	-	-	-	-	-	-	-
90.55	-	-	39	-						-		-	
90.58	-	-	-	-	-	-	-	-		-	-	-	-
90.60			220	-	25		6			-		-	
90.65	-	-	-	-	-	-	-	-	-	-	-	-	-
90.70			142	-	7		NQ			-		-	-
90.80				-	13		3	-	-	-	-	-	-
90.90		-	22	-	6		17	-	-	-	-	-	-
90.100	-	-	-	-	10	3		-	-	-	-	-	-
90.110	-	-	-	-	15	29	-	-	-	-	-	-	-
90.120	-	-	-	-		37	-	-	-	-	-	-	-
90.130	-	-	-	-		3	-	-	-	-	-	-	-
90.138	-	-	-	-	-		-	-	-	-	-	-	-
90.145	-	-	-	-			-	-	-	-	-	-	-
90.153	-	-	-	-	-		-	-	-	-	-	-	-
90.160	-	-	-	-			-	-	-	-	-	-	-
93.27	4	27	-	-	19					-		-	21
93.30	3	86		-	6			3		-		-	
93.35	-	-	-	-						-	-	-	-
93.40		48	NQ	-	3					-		-	
93.45	-	-	-	-					-	-	-	-	-
93.50		33	92	-						-		-	
93.55	-	-	-	-	20	-		-	-	-	-	-	-
93.60	NQ		-	-	8		6	-	-	-	-	-	-
93.65	-	-	-	-	-	-	9	-	-	-	-	-	-
93.70	-	-	-	-	16	-		-	-	-	-	-	-
93.80	-	-	-	-		-		-	-	-	-	-	-
93.90	-	-	-	-		-	3	-	-	-	-	-	-
97.30		12	12	-	3					-		-	31
97.32	3	6	-	-	-	-	-	-	-	-	-	-	-
97.35	-	-	70	-	10					-		-	
97.40			12	-	6					-		-	
97.45	-	-	-	-					-	-	-	-	-
97.50		53	-	-			7			-		-	
97,55	-	-	-	-	17	-	-	-	-	-	-	-	-
97.60		896	-	-	16	7		-	-	-	-	-	-
97.65	-	-	-	-	-	-	3	-	-	-	-	-	-
97.70	-	-	-	-	9		6	-	-	-	-	-	-
97.80	-	-	-	-		-		-	-	-	-	-	-
97.90	-	-	-	-		-		-	-	-	-	-	-
100.29	8	31	30	-	8					-		-	9
100.30	9		22	-	12					-		-	

Table VII (cont'd)
Record of the Larvae of Hake (Merluccius productus), 1953

	Cruise and Month												
	5301	5302	5303	5303 Late	5304	5305	5306	5307	5308	5309	5310	5311	5312
Sta.	Jan.	Feb.	Mar.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
100.35	-	-	-	-	72					-	-	-	-
100.40		232	343	-	55	3	3			-		-	2
100.45	-	-	-	-	7				-	-	-	-	-
100.50		1053	94	-						-		-	
100.55	-	-	-	-	4		5	-		-	-	-	-
100.60		1933	107	-	8					-		-	
100.65	-	-	-	-	-	-	7	-	-	-	-	-	-
100.70		3896	722	-	34	6				-		-	
100.80		2401	384	-	5					-	-	-	
100.90		-	-	-	39			-	-	-	-	-	-
103.30	-	-	-	-						-		-	10
103.35	-	-	-	-	31					-		-	3
103.40	-	-	-	-	11	15		3		-		-	
103.45	-	-	-	-	35	57		-	-	-	-	-	-
103.50	-	-	-	-	68	232		-	-	-	-	-	-
103.55	-	-	-	-	48			-	-	-	-	-	-
103.60	-	-	-	-	81	11		-	-	-	-	-	-
103.70	-	-	-	-	3	36		-	-	-	-	-	-
103.80	-	-	-	-	11			-	-	-	-	-	-
103.90	-	-	-	-				-	-	-	-	-	-
105.32	30	38	75	-	-	-	-	-	-	-	-	-	-
105.35		605	121	-	-	-	-	-	-	-	-	-	-
105.40		542	55	-	-	-	-	-	-	-	-	-	-
105.50		23	11	-	-	-	-	-	-	-	-	-	-
105.60				-	-	-	-	-	-	-	-	-	-
105.70		-	16	-	-	-	-	-	-	-	-	-	-
105.80		-	367	-	-	-	-	-	-	-	-	-	-
107.32	-	-	-	-	3					-		-	
107.35	-	-	-	-	11					-		-	
107.40	-	-	-	-	31	7				-		-	
107.45	-	-	-	-	30	43	5	-	-	-	-	-	-
107.50	-	-	-	-	3	37		-	-	-	-	-	-
107.55	-	-	-	-	3	20		-	-	-	-	-	-
107.60	-	-	-	-		3		-	-	-	-	-	-
107.70	-	-	-	-				-	-	-	-	-	-
107.80	-	-	-	-			-	-	-	-	-	-	-
107.90	-	-	-	-			-	-	-	-	-	-	-
110.33	-	130	437	-	36	NQ				-		-	8
110.35	-	5	294	-	48	48				-		-	2
110.40	-		106	-	75	71				-		-	
110.45	-	-	-	-	15	3		-	-	-	-	-	-
110.50				-		3				-		-	

Table VII (cont'd)
Record of the Larvae of Hake (Merluccius productus), 1953

	Cruise and Month												
	5301	5302	5303	5303 Late	5304	5305	5306	5307	5308	5309	5310	5311	5312
Sta.	Jan.	Feb.	Mar.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
110.55	-	-	-	-			3	-	-	-	-	-	-
110.60		6		-						-		-	
110.65	-	-	-	-	-	-	3	-	-	-	-	-	-
110.70		-		-				-	-	-	-	-	-
110.80		-	-	-			-	-	-	-	-	-	-
110.90	-	-	-	-			-	-	-	-	-	-	-
113.30	-	34		3						2		-	
113.35	42	112	377	14		5						-	
113.40	-	32	296	19	6	9				-		-	
113.45	-	-	43	35		3		-	-	-	-	-	-
113.50	3		4	201	3		3	-	-	-	-	-	-
113.55	-	-	16					-	-	-	-	-	-
113.60	-	33	17				5	-	-	-	-	-	-
113.70	-	-	-	8	6			-	-	-	-	-	-
117.26	-	12		2			3					-	
117.30	-	24		2					6	4	3	-	2
117.35	-	297	3	12			5		2			-	-
117.40	22	21	45	33	9					9		-	-
117.45	-	-	3	26	35	6		-	-	-	-	-	-
117.50	3	265	3	10	10	6		-	-	-	-	-	-
117.55	-	-	6	29	3			-	-	-	-	-	-
117.60	-	20	3		3			-	-	-	-	-	-
117.70	-	-	-					-	-	-	-	-	-
118.30	-	-	-	-	-	-	-	-	-	2	-	-	-
120.25												-	
120.30		12		11	5							-	
120.35	14	8		5	6				3			-	
120.40	-	-	82	14	3			-	-	-	-	-	-
120.45	95	187	17	13	19					-		-	
120.50		32	18		34		2			-		-	
120.55	-	-	3		31			-	-	-	-	-	-
120.60		8								-		-	
120.70		3	-							-		-	
120.80			-							-		-	
120.90	-	-	-							-		-	
123.37	7	2	458	30	6					-		-	
123.40	-	11	16	28	12					-		-	
123.45	-	48	37	6	28	5				-	-	-	-
123.50	-	43	66	66	6					-		-	
123.55	-	-	3	20	7			-	-	-	-	-	-
123.60	-	-	3					-	-	-	-	-	-

Table VII (cont'd)
Record of the Larvae of Hake (Merluccius productus), 1953

Sta.	Cruise and Month 5301 Jan.	5302 Feb.	5303 Mar.	5303 Late Mar.	5304 Apr.	5305 May	5306 June	5307 July	5308 Aug.	5309 Sept.	5310 Oct.	5311 Nov.	5312 Dec.
127.34			244	10	2				6	-		-	
127.40	-	17	522	15				2		-		-	
127.45	-	11	298	26	6					-	-	-	-
127.50	-		11	3	29					-		-	
127.55	-	-			2			-	-	-	-	-	-
127.60	-	-						-	-	-	-	-	-
130.30	-	3	214		22			-		-		-	
130.35	2	207	446		3			8		-		-	
130.40		30	222	322	33	3				-		-	
130.45	-			62		3				-	-	-	-
130.50	-		6	6	55	3				-		-	
130.55	-	-			4			-	-	-	-	-	-
130.60				7						-	NQ	-	
133.25		6	5	16	17					-		-	
133.30		160	13	58	6	4				-	6	-	2
133.35	-	-	42	27	22					-	-	-	-
133.40		99	5	4	22	2	4			-		-	
133.45	-	-	9					-	-	-	-	-	-
133.50		-		9				-	-	-	-	-	-
133.55	-	-	-			2	-	-	-	-	-	-	-
133.60	-	-	-			6	-	-	-	-	-	-	-
137.23						6				-		-	
137.30	26		32	7	15	5				-	-	-	
137.35	-	-	40	34	6			-	-	-	-	-	-
137.40		-	66	3				-	-	-	-	-	-
137.45	-	-		12				-	-	-	-	-	-
137.50		-		3				-	-	-	-	-	-
137.55	-	-	-	3			-	-	-	-	-	-	-
137.60	-	-	-				-	-	-	-	-	-	-
140.30	46	-	-	-	-	-	-	-	-	-	-	-	-
140.35	164	-	-	-	-	-	-	-	-	-	-	-	-
140.40	19	-	-	-	-	-	-	-	-	-	-	-	-
143.26	1079	-	-	-	-	-	-	-	-	-	-	-	-
143.30	7512	-	-	-	-	-	-	-	-	-	-	-	-
143.35	39	-	-	-	-	-	-	-	-	-	-	-	-
147.20		-	-	-	-	-	-	-	-	-	-	-	-
147.25	5	-	-	-	-	-	-	-	-	-	-	-	-
147.30	2	-	-	-	-	-	-	-	-	-	-	-	-
150.19		-	-	-	-	-	-	-	-	-	-	-	-
150.25		-	-	-	-	-	-	-	-	-	-	-	-
150.30		-	-	-	-	-	-	-	-	-	-	-	-
150.40		-	-	-	-	-	-	-	-	-	-	-	-
Totals	9206		8045	1214	1544	753	159	19	17	19	41	39	295
	19116												

Table VIII
Record of the Larvae of Rockfish (Sebastodes spp.), 1953

	Cruise and Month												
	5301	5302	5303	5303 Late	5304	5305	5306	5307	5308	5309	5310	5311	5312
Sta.	Jan.	Feb.	Mar.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
60.55	-	-	-	-	7	8	56	20	40	-	-	-	-
60.60	-	-	-	-	7	18	19	9	29	-	-	-	-
60.65	-	-	-	-	-		41	-	-	-	-	-	-
60.70	-	-	-	-	3	16	-	22	6	-	-	-	-
60.80	-	-	-	-	14	16	-		16	-	-	-	-
60.90	-	-	-	-	5	19	-			-	-	-	-
60.100	-	-	-	-	-		-	2		-	-	-	-
63.52	-	-	-	-	32	45	7	18	4	-	-	-	-
63.55	-	-	-	-	7	88	23	144	NS	-	-	-	-
63.60	-	-	-	-	-		70	-	-	-	-	-	-
63.65	-	-	-	-	-		57	-	-	-	-	-	-
67.50	-	-	-	-	18	-	9	-	4	-	-	-	-
67.53	-	-	-	-	-	-	-	200	-	-	-	-	-
67.55	-	-	-	-	25	-	26	12	12	-	-	-	-
67.60	-	-	-	-	-	-		10	-	-	-	-	-
67.65	-	-	-	-	-			6		-	-	-	-
70.51	-	-	-	-	34	11		32	NT	-	-	-	-
70.55	-	-	-	-				5	73	-	-	-	-
70.60	-	-	-	-	17		6	22	17	-	-	-	-
70.65	-	-	-	-	-	6	6	-	-	-	-	-	-
70.70	-	-	-	-				36	11	-	-	-	-
70.80	-	-	-	-				56	6	-	-	-	-
70.90	-	-	-	-	3			-	-	-	-	-	-
70.100	-	-	-	-	-			-	-	-	-	-	-
70.110	-	-	-	-	-	2	-	-	-	-	-	-	-
73.50	-	-	-	-	55		10	18	4	-	-	-	-
73.55	-	-	-	-	-			3	-	-	-	-	-
73.60	-	-	-	-	12			13	16	-	-	-	-
77.50	-	-	-	-		3	4		8	-	-	-	-
77.55	-	-	-	-		20	6		38	-	-	-	-
77.60	-	-	-	-	-	25	6	49	-	-	-	-	-
77.65	-	-	-	-			7		18	-	-	-	-
80.51	74	26	50	-	3	8	3	11	3	-	-	-	-
80.55	NQ	231	148	-		20	6		19	-	-	-	-
80.60	139	731	167	-			16			-	-	-	-
80.65	-	-	-	-	-	-	7	-	-	-	-	-	-
80.70		26	4	-				50		-	-	-	-
80.80	2			-		12	3			-	-	-	-
80.90		-		-		11	12			-	-	-	-
80.100		-		-						-	-	-	-
80.110	-	-	-	-		3	-	-	-	-	-	-	-
80.120	-	-	-	-			-	-	-	-	-	-	-
80.130	-	-	-	-			-	-	-	-	-	-	-

Table VIII (cont'd)
Record of the Larvae of Rockfish (Sebastodes spp.), 1953

Sta.	Cruise and Month 5301 Jan.	5302 Feb.	5303 Mar.	5303 Late Mar.	5304 Apr.	5305 May	5306 June	5307 July	5308 Aug.	5309 Sept.	5310 Oct.	5311 Nov.	5312 Dec.
80.145	-	-	-	-			-	-	-	-	-	-	-
80.160	-	-	-	-			-	-	-	-	-	-	-
81.46	-	-	-	-	-	-	-	-	-	1	-	41	44
82.47	-	-	-	-	-	-	-	-	-	55		10	22
83.40 A	NT	ST		-	ST	8							5
83.40 B	-	-	-	-	4	ST	-	-	-	-	-	-	-
83.43 A	35	974	153	-	144	10	6		4	48	26	10	57
83.43 B	-	-	-	-	43	11	-	-	-	-	-	-	-
83.48 A	29	474	226	-	231	11	11	4	12	32	8	47	66
83.48 B	-	-	-	-	91	22	-	-	-	-	-	-	-
83.51 A	566	445	139	-	149	104	13	9	3	26	14	203	63
83.51 B	-	-	-	-	-	11		-	-	-	-	-	-
83.55 A	378	576	39	-	13	56	28	12	25	12	28	86	107
83.55 B	-	-	-	-	-		-	-	-	-	-	-	-
83.60 A	37	99	302	-	24	9	15	14	22	-	-	2	5
83.60 B	-	-	-	-	-		-	-	-	-	-	-	-
83.65	-	-	-	-	-	-	8	-	-	-	-	-	-
83.70	-	-	-	-	3	12	6	-	-	-	-	-	-
83.80	-	-	-	-	3			-	-	-	-	-	-
83.90	-	-	-	-		3		-	-	-	-	-	-
85.39 A	98	243	287	-	127			37	38	24	-	70	12
85.39 B	-	-	-	-	7			-	-	-	-	-	-
85.40 A	38	72	95	-	238			21	36		-	6	19
85.40 B	23	-	-	-	65	4	-	-	-	-	-	-	-
85.45 A	11	295	283	-	97	31		12	10	6	-	58	96
85.45 B	215	-	-	-	108			-	-	-	-	-	-
85.50 A	78	252	52	-	155	7	12		20	44	-	20	28
85.50 B	-	-	-	-	137	42		-	-	-	-	-	-
85.55 A	74	109	128	-	137		12		4	32	-	4	
85.55 B	-	-	-	-	76	51	-	-	-	-	-	-	-
85.60 A		272	158	-	18	73	10	87	5	-	-	13	-
85.60 B		-	-	-	-	11	-	-	-	-	-	-	-
87.35 A	246	47	74	-	18			NQ	28	39	-	50	5
87.35 B	-	-	-	-	39	13		-	-	-	-	-	-
87.40 A	366	154	118	-	112			14	11	34	-	15	30
87.40 B	-	-	-	-	-			-	-	-	-	-	-
87.45 A	NT	400	164	-	64		6	20	22	5	-	8	61
87.45 B	-	-	-	-	-	41		-	-	-	-	-	-
87.50 A	NT	345	110	-	52				18	8	-	NS	188
87.50 B	-	-	-	-	-	62	-		-	-	-	-	-
87.55 A	96	199	6	-	113	43			42		-	4	13
87.55 B	-	-	-	-	-	20	-	-	-	-	-	-	-
87.60 A	3	29	-	-	19		4				-	2	-
87.60 B	-	-	-	-	-		-	-	-	-	-	-	-
87.65	-	-	-	-	-	-	5	-	-	-	-	-	-

Table VIII (cont'd)
Record of the Larvae of Rockfish (Sebastodes spp.), 1953

	Cruise and Month												
	5301	5302	5303	5303 Late	5304	5305	5306	5307	5308	5309	5310	5311	5312
Sta.	Jan.	Feb.	Mar.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
87.70	-	-	-	-	15	4		-	-	-	-	-	-
87.80	-	-	-	-			NS	-	-	-	-	-	-
87.90	-	-	-	-	3	5		-	-	-	-	-	-
90.28	23	34	157	-	209			5	NT	-	3	-	26
90.30	15	56	93	-	70	2		12		-	15	-	12
90.35	-	-	-	-	-	21	-	-	-	-	-	-	-
90.37			9	-	9	-	6	11	3	-	9	-	3
90.41	-	-	-	-	-	51	-	-	-	-	-	-	-
90.45		67	34	-	20				6	-	3	-	
90.50	-	-	287	-	NS	14	7	6	7	-	3	-	78
90.53	22	41	-	-	-	-	-	-	-	-	-	-	-
90.55	-	-	26	-	71	22	139	17		-	6	-	48
90.60	3		8	-	49	30	13	14		-		-	
90.70		5	7	-	2	6	NQ	18		-		-	-
90.80		3		-			11	-	-	-	-	-	-
90.90		-		-				-	-	-	-	-	-
90.100	-	-	-	-				-	-	-	-	-	-
90.110	-	-	-	-			-	-	-	-	-	-	-
90.120	-	-	-	-			-	-	-	-	-	-	-
90.130	-	-	-	-			-	-	-	-	-	-	-
90.145	-	-	-	-			-	-	-	-	-	-	-
90.160	-	-	-	-			-	-	-	-	-	-	-
93.27	18	33	NS	-	68	5		6	10	-	10	-	12
93.30	47	37	59	-	123			3	7	-		-	10
93.35	-	-	-	-	45	29	30	8		-	-	-	-
93.40	3	168	NQ	-		7	7	7		-		-	
93.45	-	-	-	-	13	8			-	-	-	-	-
93.50		22	35	-		53	10	15		-	3	-	15
93.55	-	-	-	-		-	144	-	-	-	-	-	-
93.60	NQ		-	-	2	14	6	-	-	-	-	-	-
93.65	-	-	-	-	-	-	14	-	-	-	-	-	-
93.70	-	-	-	-	3	-	58	-	-	-	-	-	-
93.80	-	-	-	-		-	4	-	-	-	-	-	-
93.90	-	-	-	-		-		-	-	-	-	-	-
97.30	267	29	81	-	99	69	5	2	7	-	11	-	23
97.32	10	80	-	-	-	-	-	-	-	-	-	-	-
97.35	-	-	6	-	3	5	3	12		-		-	3
97.40	18	15	3	-		9				-		-	
97.45	-	-	-	-		20			-	-	-	-	-
97.50	67	2	NT	-	13		61			-		-	
97.60	7	10	-	-	3	13	6	-	-	-	-	-	-
97.65	-	-	-	-	-	-	11	-	-	-	-	-	-
97.70	-	-	-	-				-	-	-	-	-	-
97.80	-	-	-	-		-		-	-	-	-	-	-
97.90	-	-	-	-		-		-	-	-	-	-	-

Table VIII (cont'd)
Record of the Larvae of Rockfish (Sebastodes spp.), 1953

	Cruise and Month												
	5301	5302	5303	5303 Late	5304	5305	5306	5307	5308	5309	5310	5311	5312
Sta.	Jan.	Feb.	Mar.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
100.29	55	175	25	-	56	47	3	10		-	3	-	42
100.30	78	42	67	-	125	44	3		7	-	9	-	32
100.35	-	-	-	-	3	3	25			-	-	-	-
100.40	3	22	17	-			37			-	5	-	16
100.45	-	-	-	-	3		30		-	-	-	-	-
100.50		36		-			49		3	-		-	
100.55	-	-	-	-	4		18	-		-	-	-	-
100.60			16	-						-		-	
100.65	-	-	-	-	-	-	13	-	-	-	-	-	-
100.70	7		3	-						-	3	-	
100.80				-						-	-	-	
100.90		-	-	-	3			-	-	-	-	-	-
103.30	-	-	-	-		44			4	-	40	-	12
103.35	-	-	-	-		43	6			-	4	-	50
103.40	-	-	-	-		6		6		-		-	2
103.45	-	-	-	-	2		6	-	-	-	-	-	-
103.50	-	-	-	-		3		-	-	-	-	-	-
103.55	-	-	-	-				-	-	-	-	-	-
103.60	-	-	-	-			10	-	-	-	-	-	-
103.65	-	-	-	-	-	-	6	-	-	-	-	-	-
103.70	-	-	-	-				-	-	-	-	-	-
103.80	-	-	-	-				-	-	-	-	-	-
103.90	-	-	-	-			5	-	-	-	-	-	-
105.32	66	122	69	-	-	-	-	-	-	-	-	-	-
105.35	4		34	-	-	-	-	-	-	-	-	-	-
105.40		3	18	-	-	-	-	-	-	-	-	-	-
105.50			6	-	-	-	-	-	-	-	-	-	-
105.60		3159	39	-	-	-	-	-	-	-	-	-	-
105.70				-	-	-	-	-	-	-	-	-	-
105.80				-	-	-	-	-	-	-	-	-	-
107.32	-	-	-	-	55	15	10			-	16	-	17
107.35	-	-	--	-	41	23	3	3		-	14	-	
107.40	-	-	-	-	6		9			-	4	-	2
107.45	-	-	-	-			5	-	-	-	-	-	-
107.50	-	-	-	-				-	-	-	-	-	-
107.55	-	-	-	-				-	-	-	-	-	-
107.60	-	-	-	-				-	-	-	-	-	-
107.70	-	-	-	-				-	-	-	-	-	-
107.80	-	-	-	-	3		-	-	-	-	-	-	-
107.90	-	-	-	-			-	-	-	-	-	-	-
110.33	-	83	52	-	6	NQ			5	-		-	46
110.35	-	13	23	-	48		11	7		-	7	-	23
110.40	-		62	-	96		3			-		-	4
110.45	-	-	-	-	4			-	-	-	-	-	-

Table VIII (cont'd)
Record of the Larvae of Rockfish (Sebastodes spp.), 1953

Sta.	Cruise and Month 5301 Jan.	5302 Feb.	5303 Mar.	5303 Late Mar.	5304 Apr.	5305 May	5306 June	5307 July	5308 Aug.	5309 Sept.	5310 Oct.	5311 Nov.	5312 Dec.
110.50			6	-						-		-	3
110.55	-	-	-	-	6		3	-	-	-	-	-	-
110.60				-			2			-		-	
110.70		-	11	-				-	-	-	-	-	-
110.80		-	-	-			-	-	-	-	-	-	-
110.90	-	-	-	-			-	-	-	-	-	-	-
113.30	-	297	21	24		11	4				5	-	87
113.35	82	40	222	40	8	48	5				20	-	
113.40	-	141	96	2	3	19		2		-	3	-	
113.45	-	-	15	7		15	3	-	-	-	-	-	-
113.50			7	53		14	3	-	-	-	-	-	-
113.55	-	-			3		8	-	-	-	-	-	-
113.60	-						5	-	-	-	-	-	-
113.70	-	-	-					-	-	-	-	-	-
115.35	-	-	-	-	-	-	-	-	-	7	-	-	-
117.26	-	52	21	14	10	56					3	-	2
117.30	-	74	10	67			10				3	-	6
117.35	-	63	58	4	49	43				3		-	-
117.40	13		311	146	208	21	5			26	3	-	-
117.45	-	-		98	183	46		-	-	-	-	-	-
117.50	8	42	3	14	22	19	58	-	-	-	-	-	-
117.55	-	-		38	11		26	-	-	-	-	-	-
117.60	-			9	3			-	-	-	-	-	-
117.70	-	-	-		3	2	3	-	-	-	-	-	-
118.25	-	-	-	-	-	-	-	-	-	1	-	-	-
119.42	-	-	-	-	-	-	-	-	-	6	-	-	-
120.25	2		2	27	3	4				4		-	
120.30 A	45	89	16	11	13		16	6		24	11	-	
120.30 B	-	-	-	-	-	-	-	-	-		-	-	-
120.31	-	-	-	-	-	-	-	-	-	7	-	-	-
120.35	23	27	8	10	10	6	12	30				-	
120.40	-	-	58	14	1	4		-	-	-	-	-	-
120.43	-	-	-	-	-	-	-	-	-	2	-	-	-
120.45	5		80	88	30	6	6			-	4	-	
120.50		6	41		62	24	10			-	14	-	
120.55	-	-			88			-	-	-	-	-	-
120.60		14		3	22				3	-		-	
120.70			-							-		-	
120.80			-							-		-	
120.90	-	-	-							-	3	-	
121.30	-	-	-	-	-	-	-	-	-	22	-	-	-
121.34	-	-	-	-	-	-	-	-	-	13	-	-	-
121.41	-	-	-	-	-	-	-	-	-	6	-	-	-
121.26	-	-	-	-	-	-	-	-	-	4	-	-	-

Table VIII (cont'd)
Record of the Larvae of Rockfish (Sebastodes spp.), 1953

	Cruise and Month												
	5301	5302	5303	5303 Late	5304	5305	5306	5307	5308	5309	5310	5311	5312
Sta.	Jan.	Feb.	Mar.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
123.37	40	30	355	61		2				-	2	-	3
123.40	-	3	44	89	27		3			-	23	-	25
123.45	-	3	3	10	55	10	9			-	-	-	-
123.50	-			3	3	9	3			-	7	-	7
123.55	-	-		3		8		-	-	-	-	-	-
123.60	-	-						-	-	-	-	-	-
127.34	2	22	75	7	18	49			6	-	18	-	
127.40	-		11	11	10	5		2		-	186	-	6
127.45	-		3	26		2	3			-	-	-	-
127.50	-					2	14			-	20	-	
127.55	-	-						-	-	-	-	-	-
127.60	-	-						-	-	-	-	-	-
130.30	-		12	1	11			NS		-	3	-	28
130.35	7		3					3		-		-	31
130.40				10		5	4			-	196	-	
130.45	-			14	42	14	6		3	-	-	-	-
130.50	NT			6		5	3			-		-	
130.55	-	-		3				-	-	-	-	-	-
130.60										-	NQ	-	
133.25			48	13	6					-	128	-	102
133.30		3	38		10	2			6	-	177	-	26
133.35	-	-	23	54		6		3		-	-	-	-
133.40		3				2	4			-	14	-	5
133.45	-	-				21		-	-	-	-	-	-
133.50		-				3		-	-	-	-	-	-
133.55	-	-	-			2	-	-	-	-	-	-	-
133.60	-	-	-				-	-	-	-	-	-	-
137.23								5	119	-	307	-	139
137.30			3	7	12		3		105	-	NS	-	14
137.35	-	-			21	2	12	-	-	-	-	-	-
137.40		-						-	-	-	-	-	-
137.45	-	-		2				-	-	-	-	-	-
137.50		-	3					-	-	-	-	-	-
137.55	-	-	-				-	-	-	-	-	-	-
137.60	-	-	-				-	-	-	-	-	-	-
140.30	2	-	-	-	-	-	-	-	-	-	-	-	-
143.26	2	-	-	-	-	-	-	-	-	-	-	-	-
150.25	11	-	-	-	-	-	-	-	-	-	-	-	-
Totals	3513		5546	989	4757	2088	1566	1181	925	491	1394	649	1781
	11165												

BIBLIOGRAPHY

Papers containing information about plankton hauls, plankton volumes, and standardized numbers of fish eggs and larvae obtained on survey cruises of the California Cooperative Oceanic Fisheries Investigations since their initiation in March 1949 are the following:

AHLSTROM, ELBERT H.

1952. Pilchard eggs and larvae and other fish larvae, Pacific coast, 1950. U. S. Dept. Interior, Fish and Wildlife Service, Spec. Sci. Rept.: Fisheries No. 80, 58 pp.

1953. Pilchard eggs and larvae and other fish larvae, Pacific coast, 1951. U. S. Dept. Interior, Fish and Wildlife Service, Spec. Sci. Rept.: Fisheries No. 102, 55 pp.

STAFF, SOUTH PACIFIC FISHERY INVESTIGATIONS

1952. Zooplankton volumes off the Pacific coast, 1951. U. S. Dept. Interior, Fish and Wildlife Service, Spec. Sci. Rept.: Fisheries No. 73, 37 pp.

1953. Zooplankton volumes off the Pacific coast, 1952. U. S. Dept. Interior, Fish and Wildlife Service, Spec. Sci. Rept.: Fisheries No. 100, 41 pp.

1954. Zooplankton volumes off the Pacific coast, 1949 and 1950. U. S. Dept. Interior, Fish and Wildlife Service, Spec. Sci. Rept.: Fisheries No. 125, 54 pp.

1954. Zooplankton volumes off the Pacific coast, 1953. U. S. Dept. Interior, Fish and Wildlife Service, Spec. Sci. Rept.: Fisheries No. 132, 38 pp.

INT.-DUP. SEC., WASH., D.C. 81070

MBL WHOI Library - Serials
5 WHSE 01686